

THE ILLUSTRATED LONDON NEWS

REGISTERED AS A NEWSPAPER FOR TRANSMISSION IN THE UNITED KINGDOM AND TO CANADA AND NEWFOUNDLAND BY MAGAZINE POST

No. 4193 VOL CLV

SATURDAY, AUGUST 30, 1919.

ONE SHILLING.

The Copyright of all the Editorial Matter, both Engravings and Letterpress, is Strictly Reserved in Great Britain, the Colonies, Europe, and the United States of America.



THE LONDON-PARIS DAILY AIR SERVICE INAUGURATED: PASSENGERS IN AN AIRCO MACHINE—TAKING ABOARD LUGGAGE.

The daily air service between London and Paris was successfully inaugurated on August 25 from Hounslow Aerodrome by three aeroplanes—an Airco 4, an Airco 16, and a Handley-Page. Most of the passengers were well-known London journalists. The Airco 16 (here

shown), piloted by Major Cyril Patteson and carrying four passengers, left Hounslow at 12.30 p.m., and reached Paris in 2 hours 25 minutes. The Editor of this paper, Captain Bruce Ingram, M.C., one of the passengers, is here seen receiving his luggage.

PHOTOGRAPH BY L.N.A.



By G. K. CHESTERTON.

THE magazines continue to abound in articles about Spiritualism. Those articles which expose and explode Spiritualism are certainly calculated to make converts to that novel creed; but fortunately the balance is redressed by the articles which defend and expound Spiritualism, which will probably make any thoughtful convert

hastily recant his conversion. I believe myself that nothing but advantage can accrue to Spiritualism from all criticisms founded on Materialism. I think there is a mystical minimum in human history and experience, which is at once too obscure to be explained and too obvious to be explained away. It may be admitted

that a miracle is rarer than a murder; but they are made obscure by somewhat similar causes. Thus a medium will insist on a dark room; and a murderer is said to have a slight preference for a dark night. A medium is criticised for not submitting to a sufficient number of scientific and impartial judges; and a murderer seldom collects any considerable number of impartial witnesses to testify to his performance. Many supernatural stories rest on the evidence of rough unlettered men, like fishermen and peasants; and most criminal trials depend on the detailed testimony of quite uneducated people. It may be remarked that we never throw a doubt on the value of ignorant evidence when it is a question of a judge hanging a man, but only when it is a question of a saint healing him. Morbid and hysterical people imagine all sorts of ghosts and demons that do not exist. Morbid and hysterical people also imagine all sorts of crimes and conspiracies that do not exist. A great many spiritual communications may be auto-suggestions; and a great many apparent murders may be suicides. But there is a limit to the probability of self-destruction; so there is of self-deception.

Now I think it well worth while to concentrate our commonsense, not on where these messages come from, or why they come, but simply on the messages. Let us consider the thing itself about which there is no doubt at all. Let us consider, not whether spirits can speak to us, or how they speak, but simply what they say, or are supposed to say. If spirits in heaven, or scoundrels on earth, or fiends somewhere else, have brought us a new religion, let us look at the new religion on its own merits. Well, this is the sort of thing the spirits are supposed to write down, and very possibly do write down—

"You make death an impenetrable fog, while it is a mere golden mist, torn easily aside by the shafts of faith, and revealing life as not only continuous but as not cut in two by a great change. I cannot express myself as I wish. . . . It is more like leaving prison for freedom and happiness. Not that your present life lacks joy; it is all joy, but you have to fight with imperfections. Here, we have to struggle only with lack of development. There is no evil—only different degrees of spirit."

The interrogator, Mr. Basil King, who narrates his experiences in an interesting article in *Nash's Magazine*, proceeds to ask whether the lack of development is due to the highly practical thing we call sin. To this the spirit replies: "They come over with the evil, as it were, cut out, and leaving blanks in their souls. These have by degrees to be filled with good."

Now I will waive the point whether death is a mist or a fog or a front door or a fire-escape or any other physical metaphor; being satisfied with the fact that it is there, and not to be removed by metaphors. But what amuses me about the spirit is that for him it is both there and not there. Death is non-existent in one sentence, and of the most startling importance six sentences afterwards. The spirit is positive that our existence is *not* cut in two by a great change, at the moment of death. But the spirit is equally positive, a little lower down, that the whole of our human evil is instantly and utterly cut out of us, and all at the moment of death. If a man suddenly and supernaturally loses about three-quarters of his ordinary character, might it not be described as "a great change"? Why does so enormous a convulsion happen at the exact moment of death, if death is non-existent and not to be considered? The Spiritualist is here contradicting himself, not only by making death very decidedly a great

of Death"; and the spirit does say that this is possible, except when he forgets and says the opposite. He seldom contradicts himself more than twice in a paragraph. But since he says clearly that death abolishes sin, and equally clearly that he abolishes death, it becomes an interesting speculation what happens next, and especially what happens to sin; a subject of interest to many of us.

Mr. Basil King asked the spirit, who had told him that animals are human, whether it is wrong to destroy animal life. It may be remarked that the questions Mr. King asks are always much more acute than the answers he gets. The answer about the killing of animals is this: "You can never destroy life. Life is the absolute power which overrules all else. There can be no cessation. It is impossible." And that is all; and for a man considering whether he shall or shall not kill a tom-cat, it does not seem very helpful. Logically, if it means anything, it would seem to mean

that you may do anything to the cat, for its nine lives are really an infinite series. In short, you can kill it because you cannot kill it. But it is obvious that if a man relies on this reason for killing his cat, it is an equally good reason for killing his creditor. Creditors also are immortal (a solemn thought); creditors also pass through a golden mist torn easily aside by the shafts of faith, and have all the evil of their souls (including, let us hope, their avarice) cut out of them with the axe of death, without noticing anything in particular. In short, Mr. Basil King, when he asks a reasonable question about a real moral question, the relations of man and the animals, gets no reply except a hotch-potch of words which might mean anarchy and may mean anything. From beginning to end the spirit never answers any real question on which the real religions of mankind have been obliged to legislate and to teach. The only

practical deduction would be that it is *no* disadvantage to have sinned in this life; as in the other case that it is *no* disgrace to kill either a creditor or a cat. If it means anything, it means that; and if it is spirits and not spiffications, the spirits mean that; and I do not desire their further acquaintance.



REWARDED WITH THE V.C. FOR "CONSPICUOUS GALLANTRY" IN THE BALTIC: LIEUT. A. W. S. AGAR, R.N.

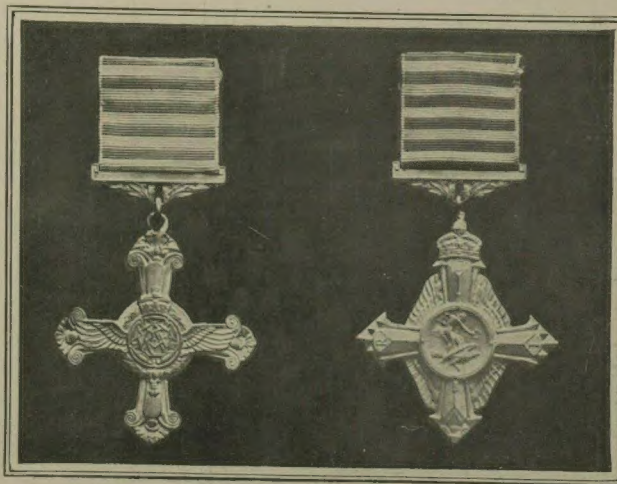
Photograph by Farrington Photo. Co.



AN ETON BOY WHO BECOMES AN HEIR-APPARENT: PRINCE NICHOLAS OF ROUMANIA, NOW HEIR TO THE THRONE.

Prince Nicholas of Roumania becomes heir to the throne of Roumania owing to the renunciation of his elder brother, Prince Carol, who has made a morganatic marriage with the daughter of a Roumanian General.

Photograph by Central News.



TWO NEW AIR CROSSES: THE DISTINGUISHED FLYING CROSS (ON LEFT) AND THE ROYAL AIR FORCE CROSS, WHICH HAVE JUST BEEN MADE.

The ribbons for these two crosses have already been issued, but the crosses themselves have only just been designed.—[Photograph by L.N.A.]

change, but by actually making it a greater change than Dante or St. Francis thought it was. A Christian who thinks the soul carries its sins to Purgatory makes life much more "continuous" than this Spiritualist, who says that death, and death alone, alters a man as by a blast of magic. The article bears the modest title of "The Abolishing

TO PARIS BY AIR: THE INAUGURATION OF A REGULAR SERVICE.

PHOTOGRAPHS BY PHOTOGRAPH, TOPICAL, AND L.N.A.



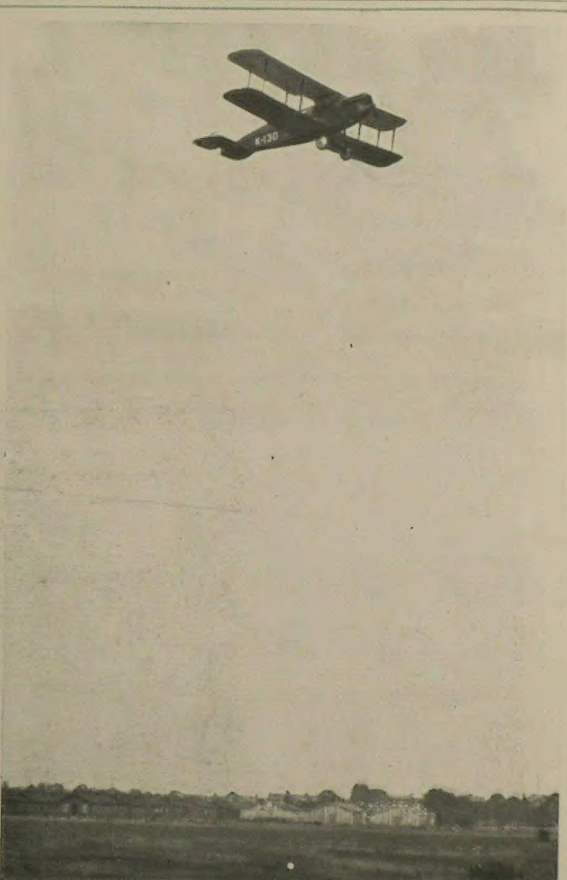
SIGNING THE CUSTOMS DECLARATION AT HOUNSLOW: MAJOR PATTESON, M.C., PILOT OF AN AIRCO 16.



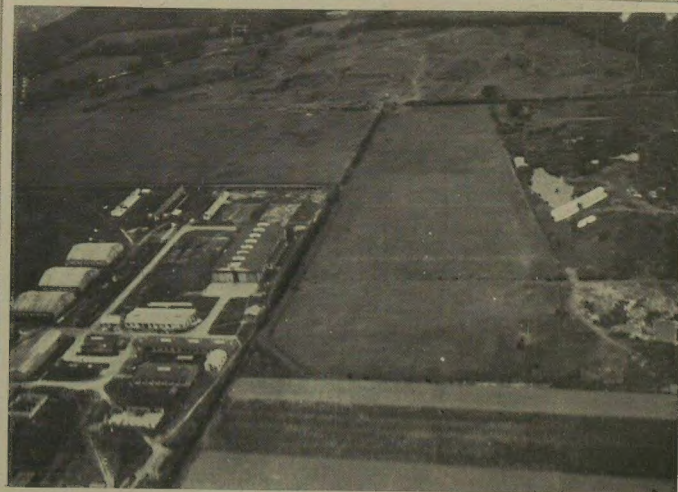
THE CONTROLLER-GENERAL OF CIVIL AVIATION AT THE START: AIR VICE-MARSHAL SYKES (LEFT) WITH GENERAL FESTING.



ALL ABOARD FOR PARIS: AN AIRCO 16, WITH FOUR PASSENGERS, ABOUT TO START FROM HOUNSLOW.



WINGING ITS WAY TO PARIS: AN AIRCO 16—THE "K 130" IN FLIGHT FROM HOUNSLOW, SEEN FROM BELOW.



PHOTOGRAPHED FROM ANOTHER AEROPLANE JUST AFTER THE START: AN AIRCO 16 OVER HOUNSLOW.

As mentioned on our front page, where another illustration of the subject appears, a regular air service for passengers and parcels between London and Paris was successfully inaugurated at Hounslow on August 25. Several well-known editors and other London journalists were among the passengers carried. Three aeroplanes took part—two of them (an Airco 4 and an Airco 16) belonging to the Aircraft Travel and Transport Company, and the other a Handley-Page. The machine here illustrated is the "K 130"

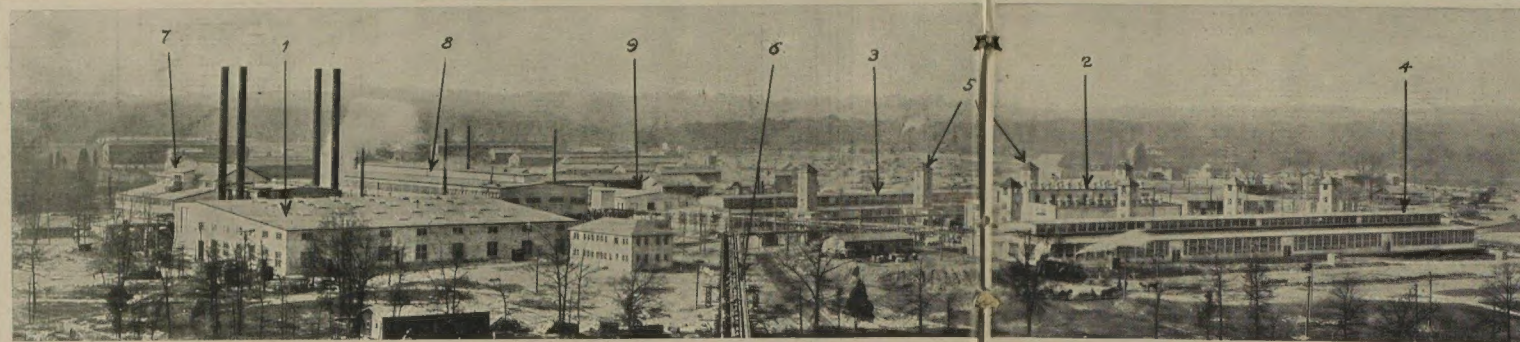
(an Airco 16), which left Hounslow at 12.30 p.m., carrying four passengers and parcels, and reached Paris in 2 hours 25 minutes. It was piloted by Major Cyril Patteson, M.C., D.F.C., who recently brought over Marshal Foch to this country. The Airco 16 will be used in future mainly to carry goods and mails. A $\frac{1}{2}$ -oz. letter (containing, say, 5000 words) will be carried for 2s. 6d.—a great saving on the cost of cables at 2½d. a word, and probably quicker.

BORN OF GERMANY'S BREACH OF THE HAGUE CONVENTION: A HUGE CHEMICAL INDUSTRY FOR MAKING POISON-GAS.

PHOTOGRAPHS BY COURTESY OF THE "SCIENTIFIC AMERICAN."

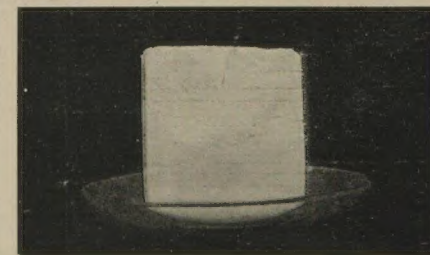


NECESSITATING MASKS: CHARGING TANKS WITH PHOSGENE GAS.

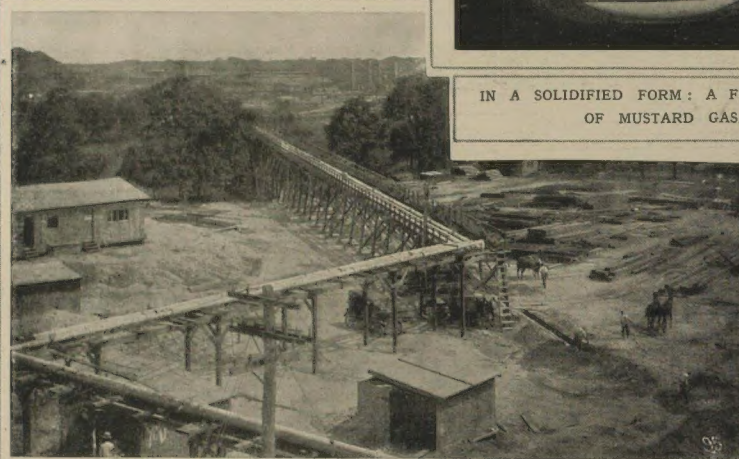


BUILT IN LESS THAN TWELVE MONTHS: THE MARYLAND, FOR

GREAT CHLORINE PLANT AT EDGEWOOD ARSENAL, PRODUCING GAS.



IN A SOLIDIFIED FORM: A FROZEN CUBE OF MUSTARD GAS.



CARRIED ON A TRESTLE NEARLY HALF-A-MILE LONG: A CHLORINE PIPE AT EDGEWOOD.

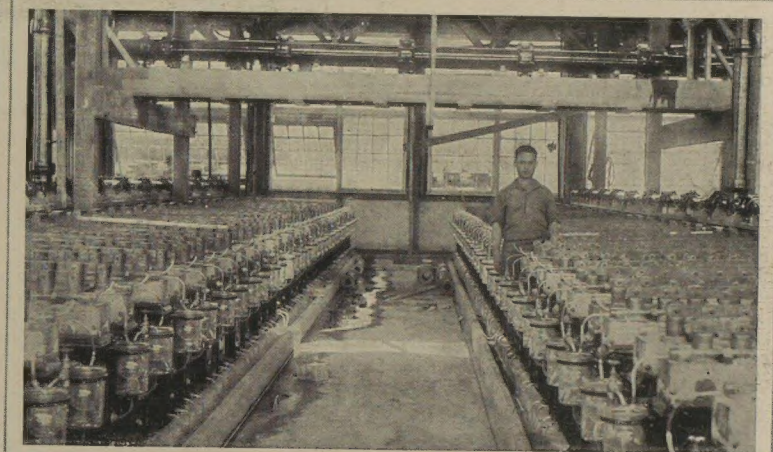


WHERE A STAFF OF 6500 MEN WERE EMPLOYED: FILLING

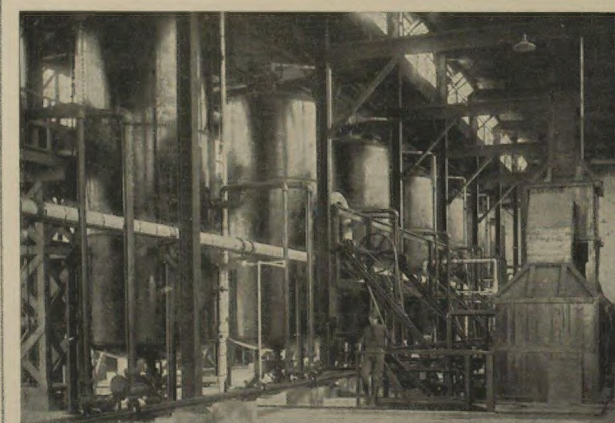
THE EDGEWOOD ARSENAL—PART OF THE SHELL-PLANT.



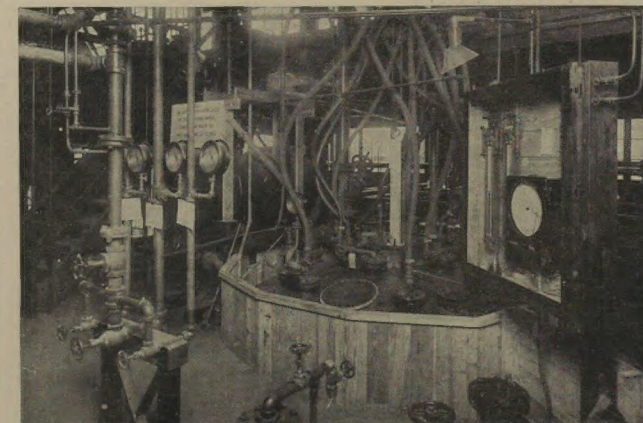
AT THE GREAT AMERICAN GAS-FACTORY AT EDGEWOOD: FILLING HAND-GRENADES.



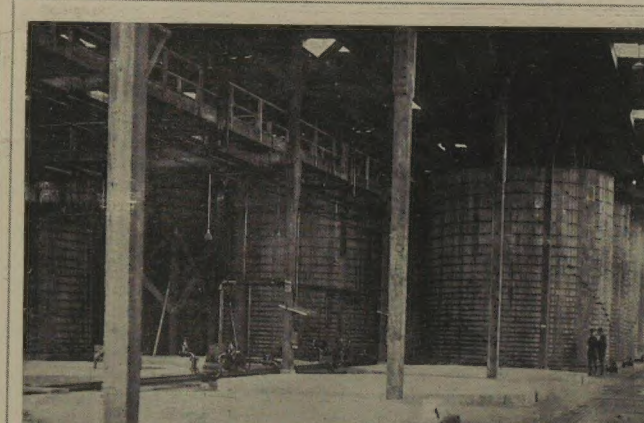
CONSTRUCTED IN SIX WEEKS: IN THE CELL BUILDING AT THE EDGEWOOD CHLORINE WORKS.



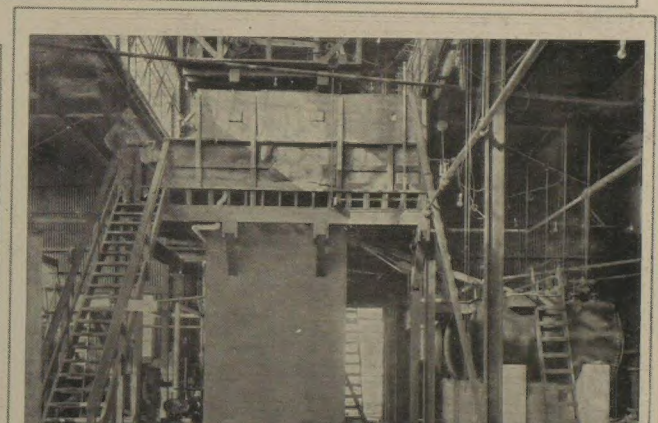
WHERE "TEAR-GAS" WAS MADE AT THE EDGEWOOD FACTORY: THE CHLORPICRIN PLANT.



MAKING A DEADLY PRODUCT, OF WHICH 28 TONS WERE PRODUCED PER DAY: THE TOP OF A MUSTARD-GAS UNIT.



IN THE SALT-PREPARATION BUILDING: SOME OF THE 20 GREAT TANKS, WITH TANK FOUNDATIONS IN THE FOREGROUND.



THE MAKING OF MUSTARD GAS: THE LATEST TYPE OF PLANT USED AT EDGEWOOD, WITH A CAPACITY OF 12 TONS PER DAY.

Germany scarcely foresaw the consequences destined to follow from her criminal breach of the Hague Convention by the introduction of poison-gas into the war. The Allies countered the local attack by inventing gas-masks and then proceeded to make gas themselves, ultimately surpassing the German gas both in quantity and deadliness. The result was the birth of a huge new chemical industry for the production of gas for war purposes. In America alone, with whose efforts these photographs deal, it attained enormous proportions. The "Scientific American," by whose courtesy the illustrations are reproduced, says: "With the entry of the United States into the war, we developed our gas-making facilities at such a rapid rate that, at the close of the war, we were making over one hundred tons of poison-gas per day, and if it had not been for the Armistice, we could have sent by January 1 (1919) to the Western Front over

200 tons per day. . . . The total output of the German factories was only thirty tons per day." In December 1917, the United States Government decided to build its own gas-factory, and in a few months the vast establishment known as Edgewood Arsenal, in Maryland, came into being. It included a huge chlorine plant and a shell-filling plant, and 6500 men were employed. In the photograph of the chlorine plant above, the arrows indicate: (1) The salt-preparation building; (2) Sub-station; (3) Cell House No. 1; (4) Cell House No. 2; (5) Chlorine drying towers; (6) Chlorine gas-pipe line to chemical plant; (7) Boiler and evaporator house; (8) Caustic fusion; (9) Drum-making shop. The shell-filling plant has a capacity in 24 hours of filling 80,000 77-mm. shells, 10,000 4.7-in., 50,000 155-mm., and 4000 8-inch shells. An article on the subject appears elsewhere in this Number.

WAR CHEMISTRY AND GERMAN ARCHITECTURE.

Poison-Gas: A Huge Industry Born of Germany's Breach of the Hague Convention.

(SEE ILLUSTRATIONS ELSEWHERE.)

WHEN the Germans broke the Hague Convention by introducing poison-gas into war, they little thought how they would ultimately be "hoist with their own petard," and what a huge industry they were creating in countries associated against them. In connection with our illustrations of the great gas-factory at Edgewood, Maryland, U.S.A. (on a double-page in this number), the *Scientific American*, by whose courtesy we publish them, says—

"The introduction of poison-gas by the Germans was a military as well as a moral blunder—a moral blunder because its use was expressly forbidden by the Hague Convention; a military blunder because, when the Germans decided to introduce this form of attack, they made the mistake of not waiting to accumulate sufficient gas to make a general attack along the whole line. It was well for the Allied cause that they did not so wait. A similar military blunder, due to impatience, was committed when they introduced the submarine attack upon merchantmen. The intention of waging such warfare long antedated its introduction. Had the Germans neglected all other construction and concentrated on submarines until they had a fleet, say, of four or five hundred, and then launched their attack, the result would have been fatal to the Allied cause.

"However, terrible although the first attack with gas proved to be, it was limited in area; the Allies came back with the gas-mask, and the Germans' chance of a decision slipped by. The Allies in self-defence made use of gas themselves, and ultimately surpassed Germany in this style of warfare. More than that, with the entry of the United States into the war, we developed our gas-making facilities at such a rapid rate that, at the close of the war, we were making over one hundred tons of poison gas per day, and if it had not been for the Armistice we could have sent by Jan. 1 to the Western front over two hundred tons of gas per day to be sprayed in shells over the whole German front. What this would have meant will be understood when it is stated that the total output of the German factories was only thirty tons of gas per day. Furthermore, we have learned since the Armistice that the greatest amount of that most deadly product, mustard gas, that the Germans could manufacture was six to eight tons per day, whereas on Nov. 11 we had a capacity of twenty-eight tons of mustard gas and by Jan. 1 would have been in a position to ship overseas a hundred tons of mustard gas daily.

"At the time of our entrance into the war we had very little knowledge as to what materials were employed by the enemy and how the stuff was made. But in November 1917 the Government decided to build a small shell-filling plant on Gunpowder Neck, Maryland, which formed a portion of the Aberdeen Proving Ground reservation, and it was at first intended to have the gas produced by chemical manufacturers and shipped to Gunpowder Neck for loading into the shells. In December 1917 the Government had decided that a better plan would be to build its own chemical plant and manufacture the toxic materials itself. At that time the property taken over at the Gunpowder Reservation was largely cultivated farm land and there was no provision for housing men or for bringing materials to the site. Bunk houses were at once built and railway spurs were laid from the Pennsylvania Railroad. Construction was started in spite of the extremely severe winter of 1917-1918. A water supply of 24,000 gallons per minute for manufacturing was brought in from the Bush River. The shipping facilities via the Pennsylvania Railroad were supplemented by dredging a channel from the reservation to Chesapeake Bay to admit of shipment by water.

"Because of the urgency of the demand, it was decided to call at once upon the chemical manufacturers of the country to assist both in investigation of processes and in the production of gas. The manufacture of chlorpicrin was begun by a firm at Stamford, Conn., and of phosgene by a firm at Niagara Falls. It was during the winter, as a result of the growing importance of gas warfare and of the representations of French and British officers who came to the United States, that the

constructional work had to be done in housing and taking care of the civilian labour which was employed in putting up the buildings, etc., and in housing the operators, who numbered 6500 and who were all enlisted men. . . .

"There was a hurry call for the construction of the gas plant, and the response made both by the engineering and chemical experts, who came out of civil life to assist the Government in this emergency, and by the contractors and labour forces, forms one of the most creditable chapters in the history of our war achievements on this side of the Atlantic."

German Monuments in Alsace-Lorraine and their Removal.

WHILE Alsace-Lorraine was under German domination, it was covered with examples of German architecture and sculpture, many of which the French are now removing. "The Germans, who are great builders," writes M. André Hallays in *l'Illustration*, "had built terribly in Alsace-Lorraine. They had built barracks, schools, hospitals, churches, palaces, and commemorative monuments. Some were for purposes of public utility, others for the glorification of Germany and her princes. The inhabitants, willy-nilly, had to defray the expense."

M. Hallays is in favour of leaving these statues intact, just as the Germans erected them. "They call up the humiliation of the past," he writes: "they enable us to taste the glory of the present hour." They proclaim also the fact that an enemy drunk with pride is always our neighbour."

Regarding the cathedral of St. Etienne at Metz, illustrated on the opposite page, he says: "The pedants of Germany could not fail to outrage so much beauty. A fire having destroyed, in 1877, the roof-timbers of the cathedral, they decided, 'for reasons of aesthetic style,' to 'correct' the work of the original builders and to alter the angle of the roof. The building consequently assumed a solid, top-heavy appearance. But the great idea of the German architects was the construction of a new porch in place of that built in the eighteenth century by Jacques François Blondel, architect to the King of France. Blondel was instructed to create, at the foot of the cathedral, a great *place d'armes*, worthy of one of the chief military cities of the kingdom. Finally, a new porch adorned the façade. Blondel chose for it the Doric order, which, with its severity and solidity, appeared to him most appropriate to the architecture of a 'war' town. It was this porch of Blondel's which the Germans destroyed, to substitute for it a Gothic porch. The pretext was to give to the building 'unity of style.' The real reason was to demolish a French work calculated to recall the visit of Louis XV. to Metz, his illness and his recovery. The people of Metz resented bitterly the outrage inflicted on them by the removal of the eighteenth century porch. Their anger was increased when they saw the new one designed by the German architect Tornow and the French sculptor Dujardin, who played a contemptible part in the sacrilege, for he was the author of the statue of William II, disguised as the prophet Daniel.

This porch, in the Burgundian style, is a pitiable composition, with feeble lines and bristling with pinnacles and sculptures, which 'swear' with the noble simplicity of the old cathedral.

"On the day of deliverance, a facetious inhabitant of Metz hung round the Emperor's neck a placard with the words, *Sic transit gloria mundi*. The inscription ought to be engraved on the figure. Thus the monument of boastful glory would become a monument of expiation."



RECENTLY REMOVED BY FRENCH ENGINEERS, WITH THE HELP OF EXPLOSIVES: THE MONUMENT TO THE PRUSSIAN CROWN PRINCE FREDERICK WILLIAM AT WÖRTH, IN ALSACE.

Government determined to erect a very large chlorine plant of its own, and in January 1918 Colonel Walker, who has been so long and favourably known to readers of the *Scientific American* as Professor Walker of the Massachusetts Institute of Technology, was made commanding officer of the Gunpowder Reservation, which is now known as Edgewood Arsenal. In July 1918 Edgewood Arsenal was made a part of the Chemical Warfare Service under the direction of Major-General William L. Sibert.

"The Edgewood Arsenal comprises the following seven departments: First, an executive office, which was moved from Washington to Baltimore and was located in McCoy Hall, one of the old Johns Hopkins University buildings; second, the construction, main-



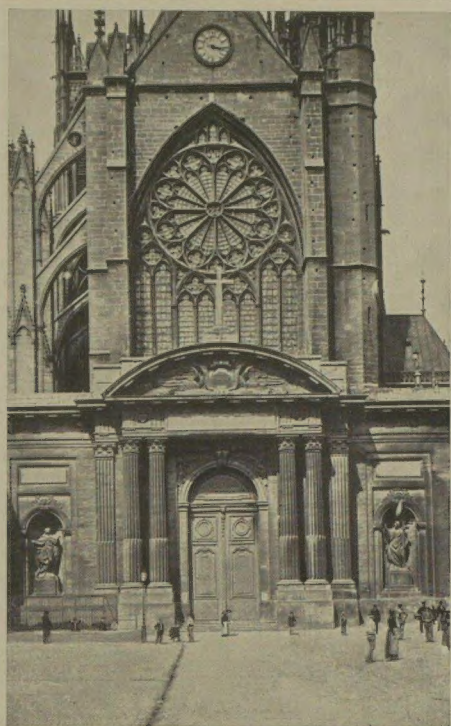
CLEARING MEMORIALS OF FORMER GERMAN VICTORIES FROM ALSACE-LORRAINE: FRENCH ENGINEERS BLOWING UP THE MONUMENT TO THE CROWN PRINCE FREDERICK WILLIAM AT WÖRTH.

Wörth, a village in Alsace, was the scene of a battle in 1870 in which the French were defeated by the Germans under the Crown Prince Frederick William of Prussia, afterwards the Emperor Frederick III. His monument there was recently destroyed, explosives being used to remove the equestrian statue.

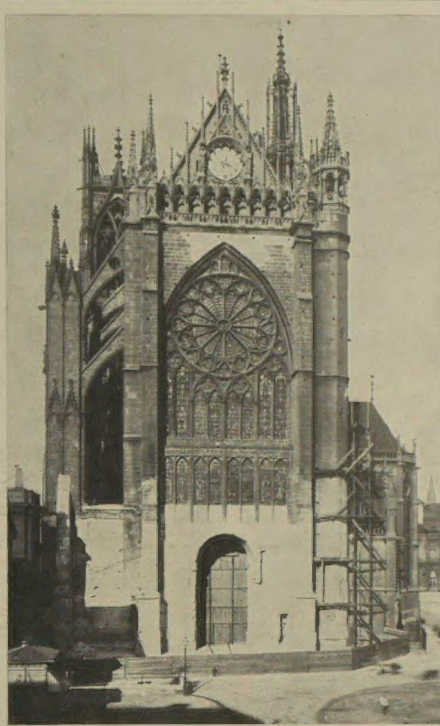
tenance, and stores division; third, the headquarters military organisation; fourth, a military medical hospital; and then the great gas-manufacturing plant proper, including, fifth, a chlorine plant for the manufacture of caustic soda and liquid chlorine; sixth, a chemical plant for the manufacture of toxic materials; and, seventh, a plant for filling the shells, Livens projector drums, Stokes mortar-bombs, hand-grenades, etc.

"Apart from the construction of the plant itself, a large amount of important engineering work and other

GERMAN "IMPROVEMENTS" AT METZ: THE KAISER AS DANIEL.



REMOVED BY THE GERMANS TO BANISH MEMORIES OF LOUIS XV.: BLONDEL'S PORCH.



AFTER THE REMOVAL OF BLONDEL'S PORCH: THE FAÇADE OF METZ CATHEDRAL.



AS IT IS TO-DAY: THE FLORID GOTHIC PORCH OF METZ CATHEDRAL, ERECTED BY THE GERMANS.



THE KAISER AS DANIEL: A STATUE ON THE GERMAN PORCH OF METZ CATHEDRAL, WITH AN IRONIC INSCRIPTION.

While Alsace-Lorraine was in their possession, the Germans covered the country with bombastic monuments of their own military prowess in the War of 1870, as a form of architectural propaganda. Since the *Revanche*, the French have demolished some of these objectionable souvenirs. The cathedral at Metz did not escape the Germans' attention. After a fire in 1877, which destroyed the roof-timbers, they carried out various alterations. In particular, they removed the Doric porch built by Blondel in the eighteenth century, and put up a new Gothic porch, ostensibly to unify the style of the

building, but really to destroy a feature that recalled the visit of Louis XV. to Metz. With the porch were removed two fine statues of "Religion" and "France." The people of Metz greatly resented the change. To a new statue of the Prophet Daniel the sculptor gave the head of the Kaiser. It may be seen in profile on the extreme right in the left-hand lower photograph. The adjoining photograph shows the inscription, "Sic Transit Gloria Mundi," recently hung round the figure's neck by a facetious Alsacian. An article on German monuments in Alsace-Lorraine appears on the opposite page

WOMEN'S INFLUENCE IN SCIENCE: BRITISH ASSOCIATION SPEAKERS.

PHOTOGRAPHS BY NICOLL, WAYLAND, SWAINE, PALMER CLARKY, AND FOSCALL.



MISS L. GRIER (ON WOMEN IN INDUSTRY).
Miss L. Grier is to present a report, jointly with Professor A. W. Kirkaldy, on the replacement of men by women in industry.



MISS C. SMITH ROSSIE (ON THE SIX-HOUR DAY).
Miss Smith Rossie, of Southsea, is to speak in the Physiology Section on the influence of the six-hour day on industrial efficiency and fatigue.



MISS R. T. SHOVE (ON EDUCATIONAL SCIENCE).
Miss Shove, of Leeds University, is to speak in the Educational Science Section on the method and substance of science teaching.



MISS CZAPLICKA (ON CENTRAL ASIA).
Miss Czaplicka, of Somerville College, Oxford, is to speak on ethnology and history in Central Asia.



MISS T. L. FRANKERD (ON A NEW STATOCYTE).
Miss Frankerd is reading a paper in the Botanical Section on a new statocyte.



MISS E. R. SAUNDERS (ON BOTANICAL GENETICS).
Miss Saunders, of Newnham College, Cambridge, is to read a paper in the Botanical Section on "A Contribution to Genetics."

DR. MARIE STOPES (ON PLANTS AND COAL).
Dr. M. C. Stopes is to read a paper in the Botanical Section on "Plants in Relation to Coal."



MISS HILDA RODWELL JONES (ON WESTMINSTER).
Miss Hilda Rodwell Jones, of the London School of Economics, is to read a paper in the Geographical Section on "The Site of Westminster."

The eighty-seventh annual meeting of the British Association for the Advancement of Science is to be held at Bournemouth from September 9 to 13, under the presidency of the Hon. Sir Charles Parsons, K.C.B. The meeting is notable for the large number of women who are taking part in the proceedings. The three directions in which women's scientific work is principally active are zoology, botany, and education, the

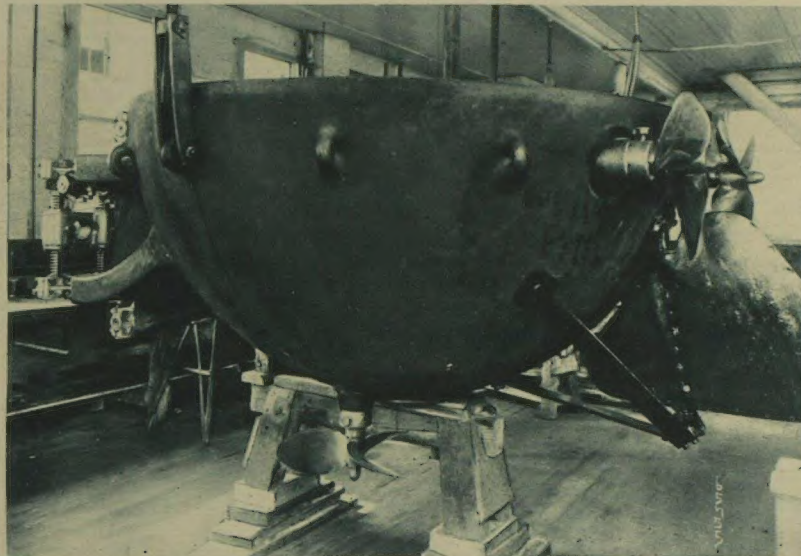
latter being regarded as an educational science by the Association. Miss E. R. Saunders, whose paper is entitled "A Contribution to Genetics," is the first and only woman member of the Council. In addition to those whose portraits we give, the lady speakers include Dr. Marie Lebour, Dr. Marion Newbigin, Miss A. J. Davey, Dr. Ethel Thomas, and Dr. Lilian Clarke.

TO RAISE SUNKEN TREASURES FROM THE DEEP: A SUPER DIVING-BELL.

PHOTOGRAPHS BY TOPICAL.

TREASURES now lying on the ocean floor in sunken ships may be regained to the world by the "Cannon Ball" submarine invented by W. D. Sisson, an American engineer. This great diving-bell has just been completed, and is now being tested. It resembles a cannon ball, 8 ft. in diameter. The shell is made of steel, and weighs, with the machinery inside, 6 tons. The submarine works by manoeuvring huge steel pontoons alongside a sunken ship, belting the pontoons to the vessel, and thus releasing the mechanism which pumps the pontoons free of water and raises the sunken ship. The largest pontoons are 40 feet long and 15 feet in

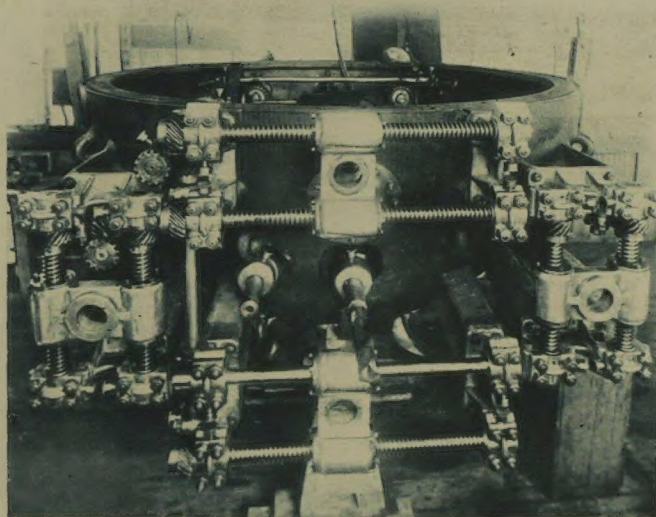
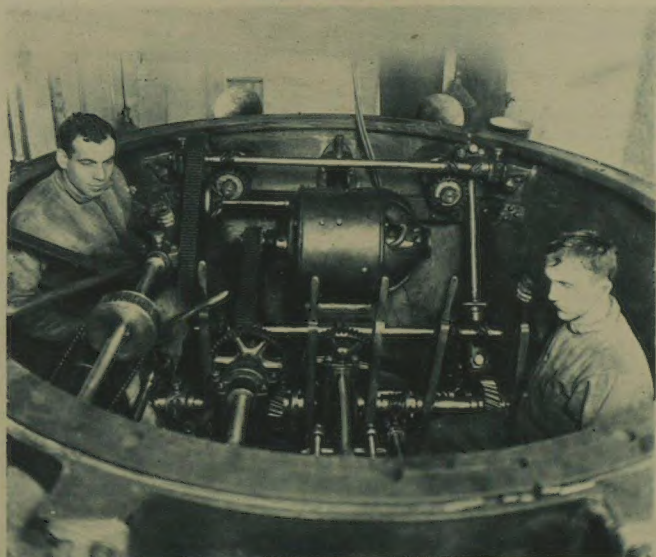
(Continued opposite.)



THE BELL WITH THE LID OFF: A HALF-SECTION OF THE "CANNON-BALL" SUBMARINE.

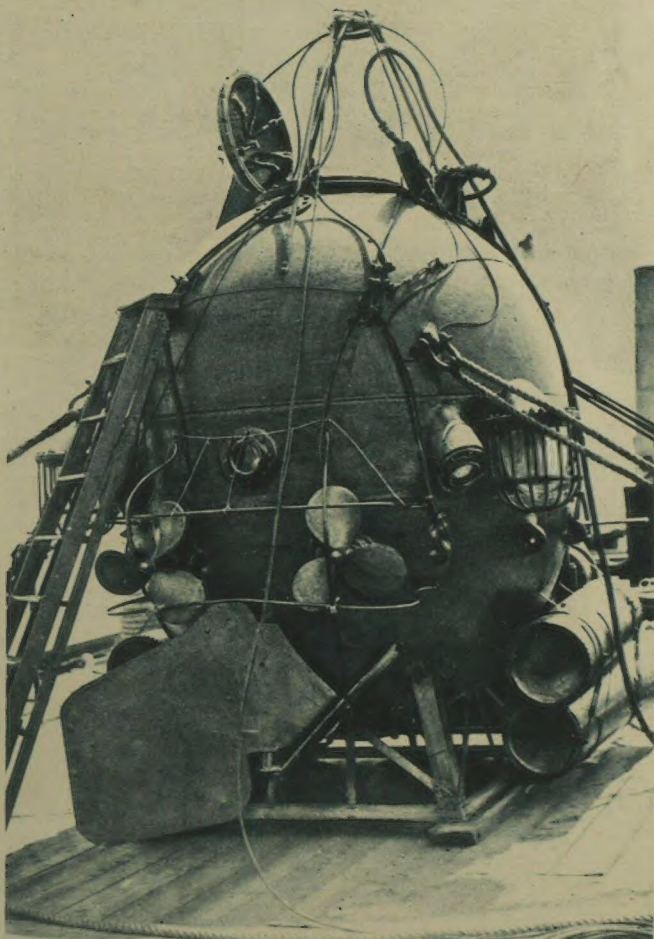
Continued.]

diameter, and lift 300 tons. Two operators form the crew, and they work in normal atmospheric conditions because of an oxygen tank on top of the sphere. The air-supply will last for 72 hours. Two propellers and a rudder give the ball lateral movement, and two propellers send it up and down. These propellers push the ball through the water at two miles per hour. In front of the ball are four 3000-candle-power lamps, covered with a steel net and a 2-inch glass, to light up the hulls of the sunken ships. Near each light is a look-out lens four inches in thickness. On the front are huge magnets which draw the ball to the hull of the sunken vessel.

SHOWING THE COMPLETED MACHINERY OF THE BELL:
A "CLOSE-UP" VIEW.

WITH THE CREW OF TWO INSIDE: ANOTHER VIEW OF THE MECHANISM OF THE MACHINE.

This new invention, which, like many new things, hails from the United States, may possibly be the means of salving millions of pounds' worth of treasures now lying at the bottom of the sea, and is of peculiar interest at the present moment in view of the recent recovery of a million pounds' worth of gold ingots from the wreck of the White



AS IT LOOKS WHEN READY TO "GO UNDER": THE COMPLETE MACHINE, SHOWING PROPELLERS, RUDDER, OXYGEN TANK, LAMPS, AND LOOK-OUT LENS.

Star liner "Laurentic" off the coast of Ireland. It will be remembered that the "Laurentic," whilst acting as an armed cruiser, was mined and sunk in January 1917. The salvage work in this case was done by divers, but, with the aid of a diving-bell such as that shown above, such work might be greatly simplified.

"ABOUT A NUMBER OF THINGS."

A Chat on Science by SIR RAY LANKESTER, K.C.B., F.R.S.



THE PHAGOCYTES, OR EATER-CELLS.

ALL living things, whether plants or animals, are either single very minute "corpuscles" of protoplasm—called "cells"—or are aggregates, i.e., built-up masses of such cells. Protoplasm is the name given to the very peculiar living, changing "slime" or viscid material of which every "cell" is constituted. The name "cell" was applied 250 years ago to the tiny

animal such as a man or a fish or a snail. And, similarly, there are unicellular plants.

Living cells acquire many different shapes and are variously active. It is not surprising that some amongst those building up a complex multi-cellular animal resemble very closely some of the independent unicellular animals.

Whilst most of the cells of a multi-cellular animal are embedded in the case-like material which they form and so constitute compact, more or less solid, living masses, which are called tissues, others float freely in the liquids of the animal body—the blood and the lymph—and are singularly like certain unicellular "animalcules" which are common in ponds and in sea-water, where they lead an independent life. These "animalcules" have long been known as *Amæba* or the *Proteus-animalcule*, and the floating cells similar to *Amæba* formed in the bodies of multicellular animals by division of the original or parent "egg-cell," are called "white blood corpuscles," also "amæboid corpuscles," or, since Metchnikoff discovered their nature and importance, the "eater-cells," or "phagocytes."

We will look first at an *Amæba*. In Fig. 1, one is shown removed from some pond-water and crawling on a glass slide. It is magnified about 200 times in diameter. The figures are actual photographs taken from the first cinema-film of a moving shape-changing *Amæba* ever produced, and were prepared and given to me by MM. Pathé of Paris. The whole film could not be printed here, but I have selected seven showing the changes of shape of the *Amæba* at intervals of about one second of time. This constant change of shape is indicated by the name *Amæba*—which is a Greek word meaning "changeable." Owing to this irregular expansion and retraction of its naked, slimy substance or "protoplasm," the *Amæba* crawls. But not only that. If it comes into the neighbourhood of a particle of food (a diatom or tiny plant-particle more minute than itself) the slimy substance of the *Amæba* is chemically attracted by it and flows around the food-particle and engulfs it, as shown in Fig. 2, A. And the particle (a.) so engulfed or swallowed by the *Amæba* with a little water (b.) is digested and dissolved in the *Amæba* by chemical processes and absorbed by it as nourishment. The *Amæba* multiplies by division into two when it grows to a certain size, and it is often very abundant among dead leaves in a rain-pool. There are many kinds or species of *Amæba*, of which that here figured is a sample.

Now we turn to the "phagocytes," the colourless corpuscles of the blood. They are parts or units of the actual substance of the multicellular animals in which they are abundant, and not parasites which have made their way in from the outside. Indeed, as we shall see, they are a sort of special guard or defence of the animal body against foreign intruders—such as Bacteria, Trypanosomes and other "germs" which constantly make more or less effectual attempts to get into that little fortress, a living animal. In Fig. 3, we have represented a "phagocyte"

from the blood of man. It is much smaller than the *Amæba*—twenty times smaller than the large one photographed—though *Amæba* as small are common. The same movements and change of shape are seen as in Fig. 1. The "phagocytes" are very abundant

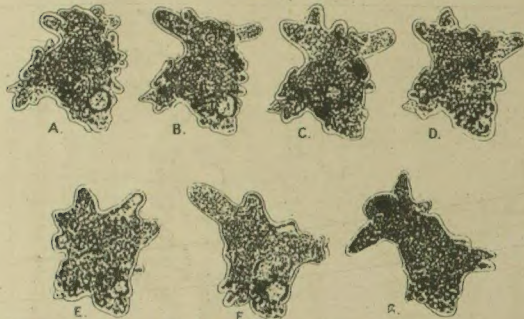


Fig. 1.—Figures from a cinema film of a rapidly moving *Amoeba*, photographed from life by MM. Pathé, of Paris. The complete series consists of photographs taken at the rate of thirty in a second of time. The figures here selected are about a second of time apart.

cases, fitted together as are the cells of a honeycomb, which the living units, or corpuscles, of protoplasm building up the leaves, stems, flowers and fruits of plants deposit around themselves. Then the application of the word was actually transferred from the cell or case to its living, slimy content—just as we say "a bottle of wine," meaning the liquid contained in the glass bottle and not the glass bottle itself.

Not only is every living thing built up by these units of living matter called "cells," and of the cases of inert material deposited by them around themselves, which may be either very copious or else negligible in quantity, but the fact is that every living thing, whether plant or animal, starts its individual existence as a single "fertilised egg-cell" usually less than 1-130th of an inch in diameter, which slowly increases in bulk and divides into two. Each of these two new "cells" grows by taking up nourishment, and divides into two, and these repeat the process, and so on for hundreds of times, until from the single egg-cell—in the course of days or weeks—an adherent mass of many million "cells" may result. Such is the case with the larger animals and plants; but there are simple kinds of both plants and animals which are single cells and remain so. They take nourishment, grow in size and divide into two; but the two, in this kind, separate from one another, and each goes on its own way. Such animals, of which many hundred kinds are known to microscopists, are called "unicellular animals." Each is comparable to a single one of the many million units which build up a large



Fig. 3.—Successive changes of form of a colourless corpuscle or "phagocyte" from the blood of man—as seen through a high-power microscope on a glass plate kept at the temperature of the human body. The phases are about five seconds of time apart.

in human blood—there are 5000 millions of them in a pint of it. In Fig. 4, a "phagocyte" from the frog's blood is drawn from the life. It is larger and even more active than that of man.

Such "phagocytes" are abundant constituents of the blood and lymph-like fluids of all animals. Fifty years ago it was shown that if some powdered vermilion is put into a drop of blood, the "phagocytes" (which were then called merely "white blood corpuscles") will engulf the fine grains of vermilion—as

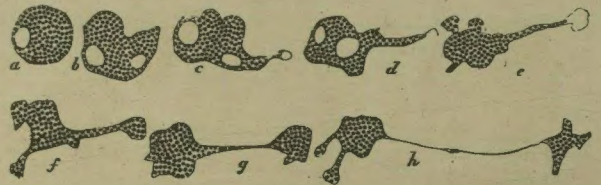


Fig. 4.—Successive changes of form of a colourless corpuscle or phagocyte of the Frog's blood—carefully drawn from life. The corpuscle is seen to be in process of fission or dividing into two (Fig. h).

The phases of change drawn are separate from each other by about five seconds.

an *Amæba* engulfs food-particles. But nothing came of this until three great discoveries were made—namely, (1) that infective diseases are caused by bacteria (Bacilli, Spirilla, and Cocci) which make their way from the exterior into the blood and tissues of healthy animals and there produce the specific poisons of the diseases (fevers, etc.) of which they are the causes (Pasteur), and that the deadly suppuration of wounds is also due to intrusive Bacteria (Lister); (2) that the colourless corpuscles push their way through the wall of the finest blood-vessels when "inflammation" occurs at a wounded or injured part of the body (see Fig. 5, and its explanation), and accumulate by millions in the injured tissues (Cohnheim); (3) that in transparent water-fleas and marine animals infected by intrusive germs or foreign particles, one can actually watch the colourless blood corpuscles engorging and destroying the infective foreign particles in great numbers (Metchnikoff). It was Metchnikoff who brought these three facts together and connected them by his doctrine of "phagocytosis"—the special activity and significance of the hitherto unexplained colourless corpuscles of the blood to which he now gave the name "eater cells" or "phagocytes." He showed by prolonged experiments and observations on all kinds of animals, healthy and diseased, that the business of the amoeba-like phagocytes of the blood and lymph of animals is to swallow and destroy all intrusive germs and also to remove dead tissue and hurtful foreign bodies.

In Fig. 2, B, we see a "phagocyte" engulfing and digesting a fever-causing "spirillum" in the blood of a guinea-pig—just as an *Amæba* engulfs its attractive food-particle (Fig. 2, A).

In Fig. 6 we see Metchnikoff's drawing of a large "phagocyte" which has "collared" a

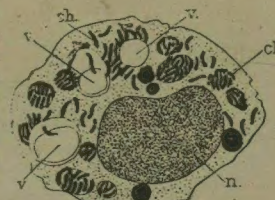


Fig. 6.—A large phagocyte of the guinea-pig which has engulfed many cholera microbes or "comma-bacilli," and is in course of digesting them. (a) Some of the cholera microbes. (n) The cell-nucleus of the phagocyte. (v.v.) Vacuole or liquid-holding cavities. (From Metchnikoff.)

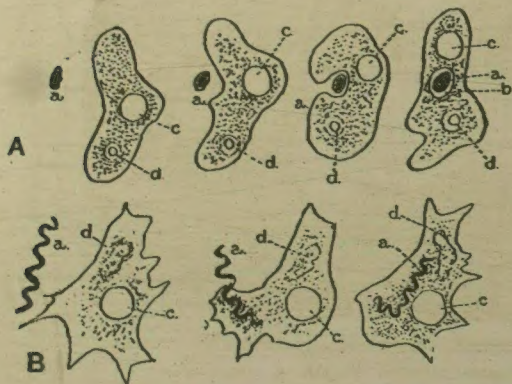


Fig. 2.—Comparison of an *Amoeba* A and a colourless blood corpuscle or phagocyte B. Each is in the act of engulfing a food particle.

The food-particle "a" in the case of the *Amoeba* is a minute green plant, and in the case of the phagocyte is a disease-germ of the kind known as a "spirillum" which produces "relapsing fever." The successive stages of the enclosure of the food-particle in the protoplasm or living substance of the *Amoeba* and the phagocyte are seen. (a) food-particle. (b) water taken in with it by the *Amoeba*. (c) vacuole or cavity in the protoplasm containing liquid. (d) the "cell-nucleus" or central kernel.

(Continued on page 301.)

TAKING THE IKANYU: A SULPHUR BATH AT A JAPANESE SPA.



"ITS WATERS WILL RELIEVE ALL YOUR AILMENTS EXCEPT LOVE": JAPANESE MEN BATHERS TAKING A "TIME-BATH" AT THE SULPHUR SPRINGS OF KUSATSU.

The Island Empire of Japan is of volcanic origin, and it is therefore quite easy to understand why it possesses an extremely large number of baths, the hot springs and mineral constituents of which are used for curative purposes. The Japanese is a great lover of hot bathing, and has retained this passion, although European doctors protest against the practice. The most interesting of all bathing stations, and one possessing at the same time the advantage of hot sulphur and cold mineral springs, is no doubt Kusatsu, at the foot of the Asamayama. "Its waters will relieve all your ailments except love,"

says a Japanese proverb. The bathing-house consists of three or four substantial wooden bathing-tanks, into which the hot water flows, and a wooden platform running round with shelves and cupboards where the people dress and undress. Beams are thrust over the tank and divide the latter into small squares. On these beams the bathers walk and crouch. The duration of the time-bath is regulated with military precision by the head attendant. From 150 to 200 half-litre scoops of hot sulphur water are poured over the head during the bath. In five or six weeks 100 to 120 baths are taken in this way.

CONGESTION AT THE LONDON DOCKS: SHIPS FULL OF MERCHANDISE UNABLE TO DISCHARGE THEIR CARGOES.

DRAWN BY CHARLES PEARS.



LYING LOADED BUT IDLE AT GRAVESEND: CARGO-SHIPS HELD UP IN THE THAMES FOR WANT OF LAND TRANSPORT AND SHEDS.

The choked condition of the London Docks has been causing much comment, and the congestion on this occasion is not the result of labour troubles, but has been ascribed to the Government, the Port of London Authority, and the Railways. The docks are chock-a-block with goods which the railway companies cannot, or will not, move, and ships are lying idle, often for a fortnight at a time, waiting to deliver their cargoes which traders are anxious to obtain, and to get clear for further activities. It is said that more than five thousand railway trucks would be required to clear away the present arrears at the London Docks. These are not forthcoming, owing, it is alleged, to the railway companies being hampered by the number of trucks

still retained by the military authorities on the Continent. Another cause of the congestion is said to be that the Government, having bought supplies far in excess of immediate needs, do not remove their imports from the transit-sheds, but use them as warehouses. There is also a shortage of lighters for landing the cargoes from the ships. The solution would appear to be to get more trucks and clear the sheds so that the ships can be "turned round" quickly. In pre-war days a ship of 8000 tons from India would come straight into the Thames, be docked at once, unload its import cargo, and be headed round and out on the next voyage within twelve or fourteen days.—[Drawing Copyrighted in the United States and Canada.]

BOOKS OF THE DAY

By E. B. OSBORN.

PATRIOTISM with us is so often a form of Nature-worship that many of our young soldier-poets found in some sudden vision of the far-off English countryside—

The gorse upon the twilight down,
The English loam so sunset brown,
The bowed pines and the sheep-bells' clamour,
The wet, lit lane and the yellow-hammer—

a sufficient reward for all the horrors and hardships of modern warfare. And in some shape or other the same thought occurred to all of them—that the bird-song and the wild flowers of their dear green island, the very sea-fenced garden of the whole wide world, are the heritage of valour and, in a sense, its requital. The "conscientious objector" who became a combatant on the score that he was ashamed of hearing the cuckoo and doing nothing, probably had a glimpse of this gracious truth. Outside the great cities it is not easy to find any Englishman, young or old, rich or poor, whose love of country is not rooted in a knowledge—scientific as far as it goes, even though inarticulate or illiterate—of the busy, harmless lives which make England a sort of sanctuary. In John and Hugh Charlton, the sons of a distinguished painter who did not long survive their death in action, this national habit of nature-worship became a genius for scientific observation comparable with that of Henri Fabre, the immortal French naturalist. Each had a great tenderness for the small lives which they lived to understand, and they were quite free from the mania to go out and kill something which is still far too common among so-called sportsmen. They would sooner use pencil or paint-brush than a shot-gun; for it was the living creature they were interested in, not the pathetic little corpse, which can be made the subject of a laboratory inquest. Their untimely death was a sad loss to natural science, which has for a long time past been paying too much attention to the *ex cathedra* theorist (who is apt to forget that his pet theory is a "working hypothesis," nothing more, if nothing less) and to the laboratory worker, and too little to the open-air observer of each—

Lean-visaged beast in dingy coat
And bird no bigger than a mote.

The foregoing reflections are prompted by the arrival of "THE SACRED BEETLE AND OTHERS" (Hodder and Stoughton; 7s. 6d. net), the new volume in the admirable translation of Henri Fabre's Works by Mr. A. Teixeira de Mattos, and the first of the four containing the naturalist's essays on Beetles, the order of insects to which he devoted the longest study. Fabre was not only the greatest naturalist of his time and clime, but also a master of literary art—a Parisian critic once described him as "the Renan of Natural History" in conversation—whose prose style has the four characteristic qualities of the oldest daughter of the Latin tongue—

Durities, pondus, splendorque colorque perennis.

In the present volume he conjures up joyous pictures of the Provençal countryside, praises with Lamb-like tenderness the child collectors who devote their Thursday afternoons (Thursday is the school holiday in the Land of Oc) to helping him for a consideration in little sons and lollipops, describes the queer doings of the Scarab and other scavenger beetles with a gentle, shimmering humour, like summer lightning in the hills, and can always find an 'apposite quotation in case of need. The Scarab, for all his long-descended divinity, is a mirth-provoking creature. He is the most enthusiastic

of pill-rollers. When he has made his tiny ball of ordure, his supreme felicity or *summa voluptas* is to cart it backwards for hours at a time, to juggle with it ecstatically under the blazing sun. By taking infinite pains in observation, Fabre has destroyed innumerable errors and illusions, some of them still current in text-books, as this strange insect's life-history. For example, Blanchard and Illiger both tell their readers that, when the Scarab gets into difficulties with his malodorous pill—when, for instance, it rolls into a hole—he goes away and enlists the help of a number of companions. But, as Fabre shows, there is no truth whatsoever in this oft-repeated story. It is true the other Scarabs arrive when there is any delay in the trundling of the ball. But they do so in the hope of stealing it, of securing a supply of nourishment without the trouble of working for it. "I ask myself,"

of perpetuating itself.

The egg, as Fabre has proved, is deposited by the female in a pear-shaped production, a cunningly wrought larder-cradle, which she buries in a safe place. So the Scarab's family life is finally elucidated. I find that most children approaching their teens are interested in Fabre's wonderful essays, and are often persuaded by reading them to start little investigations of their own: one little girl I know of, pixie and bookworm and sportswoman in equal parts, is now Fabre's disciple to the extent of trying to discover what suburban birds feed on! Wouldn't that have pleased the old man, who is accepted to-day as one of the glories of French science and literature!

There are several other books on my study table, in which the study of the living creature rather than of the *caput mortuum*, or of theories pertaining, is enforced by precept and practice. "BIRD BEHAVIOUR" (Hutchinson; 7s. 6d. net), by Frank Finn, F.Z.S., is full of the harvesting of an observant eye, and I, for one, cordially agree with the author in stigmatising as unscientific the naturalist who said of the sparrow: "I have got into the habit of not noticing this bird." Science will get into the habit of not noticing such scientists, and serve them jolly well right. Mr. Finn's last chapter deals with the relations of birds and the "beakless things that have no wings," who think they own creation. It contains an interesting observation which shows how even the chronic cit may make curious little discoveries, if he keeps his eyes open:—"In the few cases in which I have seen Starlings feeding in a street, they have always been single birds, and those that roost on Nelson's Column (where, curiously enough, they never alight on the statue of the hero himself) used, when I first observed them some years ago, only to drop in in ones and twos, and not, as now, in parties." It is astonishing how soon birds adapt themselves to town amenities. Some time ago I procured a number of birds'-nests taken in the suburb where I live (a *rus in urbe* in a curve of the Thames so shaped as to make it almost an island) and had a careful catalogue made of the component parts of each derelict home. The items ran into thousands and were extraordinarily varied—one contained a fragment of a London daily, and I wonder what the proprietor would pay me for the information? "THE FLOWER AND THE BEE" (Constable; 10s. 6d. net), by John H. Lovell, which is illustrated from photographs by the author, is also full of newly observed facts. Mr. Lovell never forgets the grim Haeckel's tribute to the part flowers play in the ministry of beauty, and the moral of his book is that of the lines Barham inscribed over the door of his greenhouse:—

Slave to no sect, who takes no private road,
But looks through nature up to nature's God.

But he does not omit to show how vastly the domestic bee has added to the yield of American orchards, quoting the grateful words of a New Jersey fruit-grower who said: "I could not do without bees. I never take a pound of their honey." It is such touches of kindness that make man and his winged pensioners all one kin and are the true acts of Nature-worship, which should begin at home (as a fervent form of patriotism) but need not end there.



"I FELT INCUMBENT UPON ME THE HEAVY RESPONSIBILITY OF HASTENING THE END OF THE WAR": GENERAL LUDENDORFF, WHOSE WAR MEMOIRS ARE OF MUCH INTEREST.

General Ludendorff was Chief of Staff to Marshal Hindenburg in his Russian campaigns, and, after the fall of von Falkenhayn from power, First Quartermaster-General. No highly placed German General saw so much of the war, and not even Hindenburg himself exercised such influence on German military policy. Passages from his War Memoirs were recently printed in the "Times" by arrangement with Messrs. Hutchinson, who are issuing them in book form. They constitute the most important work on the war so far—at any rate from the German point of view.—[Photograph by C.N.]

writes the wise and witty observer, "what Proudhon introduced into Scarabæan morality the daring paradox that 'property means plunder,' or what diplomatist taught the dung-beetle the savage maxim that 'might is right.'" The ball does not, as is still stated in popular books on the wonders of insect life, contain the female's egg, the male's hope of immortality. It is merely a supply of food which the Scarab devours mechanically, eating the clock round, if there is enough, and ejecting the useless residue in a dry, black, innocuous thread. If cleanliness be next to holiness, then the Scarab well deserves the respect he received from the ancient Egyptians; for he keeps vast countryside sweet and clean, being really an automatic sanitary appliance which has discovered the secret

BOLSHEVISM AT SEA: A SALVED WAR-SHIP: KRONSTADT FROM THE AIR.

PHOTOGRAPHS BY CENTRAL NEWS.



1. SALVED AFTER BEING BLOWN UP BY THE BOLSHEVISTS IN SEBASTOPOL HARBOUR: THE RUSSIAN DREADNOUGHT "EMPRESS MARIE" IN DOCK.
2. AS SEEN BY OUR BOMBING AEROPLANES: BOLSHEVIST SHIPS IN KRONSTADT HARBOUR BEFORE BEING DESTROYED AT SEA—AN AIR PHOTOGRAPH.

The "Empress Marie," a Russian Dreadnought, which was blown up by the Bolsheviks in Sebastopol Harbour, has been salvaged and is now in dry dock. As the hull of the ship is intact, efforts are being made to turn her into a merchant ship. Our upper photograph shows a stern view of the "Empress Marie" in dock.—The Bolshevik

war-ships recently sunk by British coastal motor-boats were forced to leave Kronstadt Harbour owing to a fire started by the bombardment and air-raids. They had not proceeded far before they met the British naval forces. The lower photograph shows Bolshevik vessels in Kronstadt Harbour, photographed from a British aeroplane.

BUILDING SAND-CASTLES CLOSE TO BUCKINGHAM PALACE: A SUBSTITUTE FOR THE SEASIDE IN ST. JAMES'S PARK.

DRAWN BY STEVEN SPURRIER.



A BOON TO LITTLE LONDONERS FOR WHOM THERE IS NO SUMMER HOLIDAY AT THE SEASIDE: ARTIFICIAL "SANDS" IN ST. JAMES'S PARK. CROWDED WITH HAPPY CHILDREN.

There are thousands of children in London for whom summer brings no holiday at the seaside. They must be content with such substitutes as the authorities provide in the public parks, in the shape of artificial "sands," like those in St. James's Park, here illustrated, and with a dip in the Serpentine and other bathing-places. It may not be

quite as good as "the real thing," but evidently the young diggers get plenty of enjoyment out of building sand-castles, even without the sea to fill their mouths. Childhood is easily pleased, and "what the eye does not see, the heart does not pine for."—[Drawing Copyrighted in the United States and Canada.]

THE FIRST OF ITS SPECIES EVER BROUGHT TO EUROPE ALIVE: AN OKAPI.

BY COURTESY OF DR. GEORGES LEBRUN AND DR. MICHEL L'HÔST.



THE arrival of a living Okapi in Europe is an event of the deepest interest to naturalists, for this rare denizen of the Congo forest was only discovered (by Sir Harry Johnston) in 1900, and for a long time was never even seen alive by Europeans. The specimen here shown was recently brought over, among a large collection of other animals, by Dr. Georges Lebrun, Belgian Administrator in the Congo, who succeeded, in spite of great difficulties, in bringing them to the African coast, for shipment, from a point over 1200 miles inland. This animal, when only a few days old, was obtained from Congo natives by Commandant Landeghem, a Belgian District Commissioner; and his wife tended it carefully at her husband's quarters, several hundred miles above Boma. The Zoological Society of London, in whose scientific proceedings the okapi was first named, figured, and described, offered a large sum for this specimen, but Mme. Landeghem, with a natural preference for her own country, decided to present it to the Zoological Society of Antwerp. It is now in the Zoological Gardens there, next door to its relative, the giraffe. It is very tame, and feeds on bread, green stuff, carrots, clover, and so on. We are indebted for our illustrations to Dr. Lebrun and Dr. Michel L'hôst, Director of the Royal Zoological Society of

(Continued opposite)



Antwerp, who took the photographs. Our readers may be reminded that in our issue of August 3, 1907, we published the first illustration of okapis, from dead specimens brought home by Major Powell-Cotton and Lieut. Boyd Alexander, and set up by Mr. Rowland Ward. They were shown in a photograph of their native haunts taken by Major Powell-Cotton. As we then mentioned, Major (now General) Marchand described an animal believed to be an okapi, and was probably the first European to see it. In our issue of September 7, 1907, we published the first photograph ever taken of a living okapi, together with an article on the subject by Sir Ray Lankester, who said: "That interesting creature, the okapi, allied to the giraffe, and discovered by Sir Harry Johnston on the eastern border of the Congo forest, had never been observed and studied by a white man in its living state until five months ago, when a young calf okapi about a month old was obtained by Signor Ribotti at Bam-billi, on the Evelle River. . . Sir Harry Johnston first sent home only a hand cut from the striped part of the okapi's skin by the natives, and, as it resembled the striped skin of the zebra, Dr. Sclater thought it indicated the existence of a new species of that kind, to which he gave the name, 'Equus Johnstoni.' A year later (in 1902) Sir Harry Johnston sent to me the

(Continued below)

THE RAREST OF LIVING MAMMALS: A FEMALE OKAPI FROM THE CONGO PRESENTED TO THE ANTWERP "ZOO."

Continued. complete skin and skull of a nearly adult okapi, with the information that the name *okapi* is that which the Pygmy people of the Congo forest give to this animal. Sir Harry recognised its affinity to the giraffe, which I was able to confirm. . . . Individuals differ a great deal in the striping of the haunches and foreleg, and the males differ from the females in the size

and shape of the skull as well as in the size of the horns. . . . One remarkable illusion with regard to the okapi exists . . . that it is a hybrid—a cross between zebra and antelope. . . . As a matter of fact, no hybrids are known to occur at all among terrestrial animals in a state of nature. Hybrids are only produced under the management and interference of man."

THE SINKING OF TWO BOLSHEVIST BATTLE-SHIPS BY BRITISH

PHOTOGRAPHS OF COASTAL MOTOR-BOATS BY COURTESY OF MESSRS. JOHN I. THORNTON AND CO., LTD.; PORTRAITS BY CENTRAL PRESS.



REPORTED KILLED IN THE BALTIC FIGHT: SUB-LT. T. R. G. OSBORNE, R.N.



OF THE TYPE WHICH SANK BOLSHEVIST BATTLE-SHIPS: A THORNYCROFT COASTAL MOTOR-BOAT OR "SCOOTER."



REPORTED MISSING, BELIEVED DEAD: SUB-LIEUT. M. F. MACLEAN, R.N.



PHOTOGRAPHED FROM THE AIR AT 500 FT.: C.M.B.s OF THE AUXILIARY PATROL OFF DOVER, GOING AT FULL SPEED.



CARRYING A TORPEDO: A 43-FT. MOTOR TORPEDO-BOAT BUILT FOR RUSSIA, ON TRIAL ON THE THAMES.



REPORTED MISSING, BELIEVED DEAD: SUB-LIEUT. O. C. H. GIDDY, R.N.



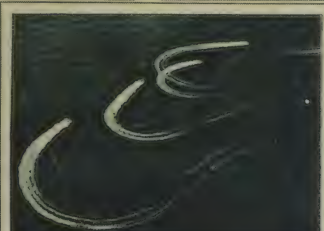
ONE OF THE TWO BOLSHEVIST BATTLE-SHIPS SUNK BY BRITISH COASTAL MOTOR-BOATS: THE "ANDREI PERVOZVANNYI."



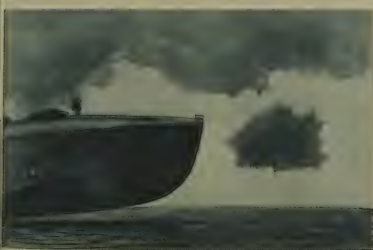
REPORTED MISSING, BELIEVED DEAD: LIEUT. L. E. S. NAPIER, R.N.



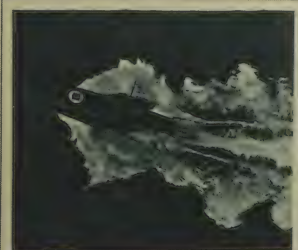
SHOWING THE HUGE WASH AND BOWS LIFTED CLEAR OF THE WATER: A 40-FT. C.M.B. ON TRIAL AT FULL SPEED.



PHOTOGRAPHED BY A GERMAN AIRMAN IN ACTION AGAINST THEM: C.M.B.s TURNING—AN HELIX-LIKE EFFECT.



ENORMOUS WASH AT THE STERN: A COASTAL MOTOR-BOAT RACING TOP SPEED.



PHOTOGRAPHED FROM THE AIR: THE DECK OF A C.M.B. GOING AT HIGH SPEED.



INCLUDING SEVERAL REPORTED KILLED OR MISSING IN THE BALTIC FIGHT: C.M.B. OFFICERS AT QUEENBOROUGH.



SHOWING HOW THE BOWS LIFT CLEAR OF THE WATER AND ALONG AT

The Admiralty announced on August 19: "A report has been received from the British senior naval officer in the Baltic that a naval engagement took place in the Gulf of Finland early on August 13. Two Russian battle-ships, the 'Petrovskiy' and the 'Andrei Pervozvannyi,' and one destroyer were sunk. A cruiser was also probably seriously damaged. The British losses were three coastal motor-boats." The 'Petrovskiy' had a displacement of 23,379 metric tons, and carried twelve 12-in. guns. The 'Andrei Pervozvannyi' had a displacement of 17,480 metric tons, with a complement of 913, an indicated horsepower of 77,600, speed of 18 knots, and four 12-in. guns. In a list of British casualties issued later by the Admiralty, among the officers reported killed were Lieut. Archibald Dayrell-Read, D.S.O., Lieut. William H. Bremner, D.S.O., and Sub-Lieut. Thomas R. C. Osborne. Among those reported missing and

believed to be dead were Acting Lieut-Commander Frank T. Brade, D.S.C., Lieut. Laurence E. S. Napier, Sub-Lieut. Osman C. H. Giddy, and Sub-Lieut. Hector F. Maclean. In our photograph showing the officers of the fast twelve Coastal Motor-Boats at Queenborough, Lieut. Dayrell-Read is seen standing on the extreme right in the fourth row (at the back), Lieut. W. H. Bremner is sitting second from right in the second row (behind the dog standing in front), and Lieut-Commander Brade is third from left on the ground in the front row. It has since been stated that our motor-boats attacked immediately off Konstad, without the support of the fleet, but accompanied by three aeroplanes. The British squadron in the Baltic, which has done such brilliant work, is under the command of Rear-Admiral Cowan.

THE WORLD OF FLIGHT

THE USES OF AN AIR FORCE.

By C. G. GREY,

Editor of "The Aeroplane."

JUDGING by articles which have appeared in the Press lately, there seems to be a very grave danger that the development of the Royal Air Force may be severely hampered, if not entirely prevented, by Treasury parsimony. Recently in the House of Commons Mr. Churchill announced that Sir Hugh Trenchard, Chief of the Air Staff, had agreed to the possibility of running the Air Force on a sum of £25,000,000 per annum, and Mr. Churchill himself

In those periods which are commonly known as times of peace—that is to say, when there is no great war between Great Powers in progress, and when each Great Power is merely carrying on a number of small wars on its own account, there are, in fact, very much better opportunities for an Air Force, as distinct from the Navy or the Army, than there can possibly be during a great war. Therefore it must be apparent that it will pay the nation comparatively better to

one is correct in saying that there were only two Squadrons available, and that neither of these two Squadrons had at any time its full equipment of aeroplanes. Consequently the Air Force was not able to influence the course of the campaign to anything like the extent which would have been within its power if it had had greater numbers of machines of better quality. Mr. Churchill might also have explained that the North West frontier of India is quite the worst possible country in which to use aeroplanes. In order to reach the enemy's big towns it was necessary to fly over rocky mountains in which an enforced landing meant a certain crash. The same mountains provided the best possible cover for enemy forces, so that aeroplanes could not even operate against troops in the field to advantage. Yet in spite of obsolete machines, inadequate numbers, almost impossible country, and the worst possible climate, these two little squadrons of the Royal Air Force have demonstrably saved the Indian Exchequer far more in hard cash than the mere £25,000,000 which the critics of the Air Ministry grudge for the maintenance and equipment of the entire Royal Air Force, which in its operations will serve the whole British Empire.

One has only to think of the enormous amount of military police work to be done in the British Empire to realise how easily an Air Force which would cost even £50,000,000 or £100,000,000 per annum would pay for itself over and over again. Under the British régime Mesopotamia may very well become the granary of the British Empire; but to protect the agriculturists against predatory tribes it will be necessary to maintain quite a considerable Army in that country, simply owing to the rapidity with which robber tribes can move, and the slowness with which troops can move. For such work as this a couple of squadrons of the Royal Air Force mounted on thoroughly efficient aeroplanes could easily do the work of a division of infantry or a brigade of cavalry. Similarly, in Africa, where friendly native tribes have to be protected against their various hereditary enemies, quite a few aeroplanes would give all the protection necessary. In much the same way, where we have to maintain police forces along the great rivers of Burmah, a couple of flying-boats would do the work of a hundred police in keeping Dacoits under proper control.

One could extend such instances indefinitely, and it would be comparatively easy to prove that, even



THE FIRST REGULAR CROSS-CHANNEL AIR SERVICE: AN AIRCO MACHINE (D.H.4A) FOR THE LONDON-PARIS FLIGHTS.

It was arranged by Aircraft Transportation and Travel, Ltd., to begin on August 25 a daily aeroplane service, for passengers and small parcels, between London and Paris, the machines to leave at 12 noon in each direction, weather permitting, and the time of flight being estimated at 2½ hours. Motor-cars carry passengers between the Haymarket and the aerodrome at Hounslow, and in Paris between the Place de l'Opéra and the aerodrome. At first there was to be only one machine per day carrying four passengers; but it is hoped to extend the service. The company also offers a ten-guinea trip of four days, including a motor-car ride through the New Forest, and a flight over Southampton Water and the Solent, and along the northern coast of the Isle of Wight. The booking agents are the American Express Company, 6, Haymarket.

reminded the House that, at the present rate of pay and at the present price of material, this merely represented what a sum of £12,000,000 would have given us before the war. Regardless of the teaching of history, some people seem to imagine that the present price of money is merely a temporary inflation, and that we shall in due course see the sovereign again buying what it used to buy before the war. A very superficial knowledge of history shows that after every big war, or in fact after every big national crisis which has caused the value of money to fall, the fall has been practically permanent. One has only to go back far enough to find that there was a time not so long ago when a shilling would buy as much of the necessities of life as a sovereign will buy to-day. Therefore we may as well make up our minds that money is not going to return to its previous value, and that, even if the Treasury allows the full £25,000,000 of which Mr. Churchill spoke, we shall then only get an Air Force which £12,000,000 would have supplied before the war; and it may be taken as a fact that if the sum is reduced any further it will be an utter impossibility for anybody—even for a man with a genius for organisation and finance—to equip and maintain even a nucleus Air Force.

People are rather apt now to regard the Air Force merely as an accessory to the Navy and Army. In time of war it is perfectly true that the King's Flying Services were practically accessories. The Navy was doing whatever fighting there was to be done at sea, and the R.N.A.S. was merely a very small part of the Navy. By far the greatest amount of fighting in the war was done by the Army; and here again, although we had actually a bigger Air Force than any other country (with perhaps the exception of Germany) the R.F.C., until quite near the end of the war, was merely a small, but necessary, component part of the Army. In fact the aeroplanes in this war did very much what cavalry have done in previous wars when open fighting prevailed. It was only during the last six months of the war that the Independent Force, R.A.F., came into being and began to carry on air war as distinct from the operations of the Army; and even then the work of the Independent Force was part of the general strategic plan of the Allied Armies

maintain an adequately large and thoroughly efficient Air Force in so-called peace time than in war time. Mr. Churchill himself set before the House of Commons perhaps the most cogent argument of all in favour of maintaining an adequate Air Force. He pointed out that the Afghan war which has recently come to an end after a few weeks' fighting was finished in such



THE LONDON-PARIS DAILY AIR SERVICE: ANOTHER TYPE OF AEROPLANE EMPLOYED.—
AN AIRCO 16.

a short space of time almost entirely because we were able to use aircraft; and he compared this brief and comparatively bloodless campaign with the Afghan wars of the time of the late Lord Roberts, which cost thousands of lives and many millions of pounds.

Mr. Churchill did not, in fact, develop his argument to the fullest extent, because he omitted to state that the aeroplanes used by the R.A.F. in this latest Afghan affair were of quite ancient and inefficient types, and that there were very few of them. One believes

supposing no war broke out at all, the Air Force would easily save its £25,000,000 per annum merely as police. But when one considers that for all our League of Nations and for all our combinations of Powers as an assurance of peace, there is always the danger of a new war breaking forth, then surely £25,000,000 per annum is a very small insurance policy for the nation to pay against an outbreak of a minor war, which, if only handled by troops on the ground, would easily run away with £100,000,000 and thus absorb the whole cost of maintaining the Royal Air Force for four years.

GRATON & KNIGHT

Standardized Series

LEATHER BELTING

Tanned by us for belting use

Common Sense in the Standardization of Belting

You have standardized your signature.

You buy standardized tools, standardized machinery, and a hundred other standardized things instead of having them made to order. It is safer for you—easier and more economical.

Why don't you standardize your belting?

Consider what standardization has done for your own product, for other products you use.

Translate these advantages into terms of belting.

Analyze belt installations. You find the requirements of power transmission fall into a small number of sharply defined classes—about a dozen if you define them scientifically.

Standardized Belting offers you a standard belt that is exactly suited to each one of these classes. You adopt the one that is fitted to the needs of your own work. That is standardization—just plain common sense applied to power transmission.

There are Graton & Knight Standard Brands—all standardized on the basis of work to be done and conditions to be met.

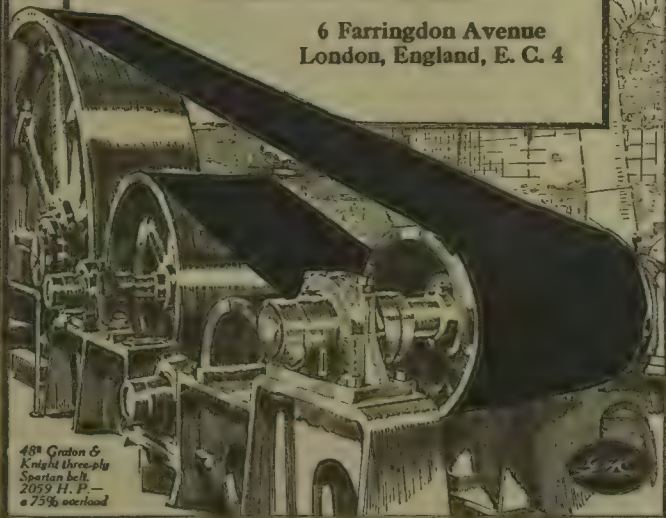
Standardize your belts. Consult our representatives. Submit your power transmission problems to us—get expert advice.

Write for booklet, "Standardized Leather Belting"

The Graton & Knight Mfg. Co.

Oak Leather Tanners and Belt Makers

6 Farringdon Avenue
London, England, E. C. 4

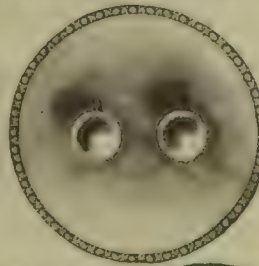


WHY BUY HIGH-PRICED PEARLS?

Ciro Pearls

STOP PROFITEERING.

No. 15—
Pair of Earrings
with single
Ciro Pearl,
which will
deceive
experts.
Price—
£1-1-0



Ciro Pearls are so wonderful, so lasting in lustre, so beautiful in colour, that only genuine pearls can compare with them.

In appearance and by every test they are so much like real pearls that experts can hardly tell the difference.

Clients are continually writing us of the wonderfully genuine appearance of Giro Pearls.



You can own beautiful pearls without the enormous expense of genuine gems.

No. 4—Necklet of famous
Ciro Pearls (18½ ins. long)
Price £1-1-0
Gold Clasp, 2s. 6d. extra.



No. 12—
Ring with
one Pearl
in Gold
or
Platine.
Price—
£1-1-0

OUR UNIQUE OFFER

YOU MAY HAVE CIRO PEARLS ON APPROBATION FOR ONE WEEK.

We will send you a necklet, a ring, or any jewel with Giro Pearls, on receipt of £1-1-0. Put it beside any real pearls or any other artificial pearls, and if it is not equal to the genuine, or superior to the other artificial pearls, return it to us, and we will refund your money.

Our Provincial customers may send their orders by the post, and will receive the same attention as if they called upon us personally.

OUR NEW ILLUSTRATED BOOKLET No. 16 WILL INTEREST YOU.

Our only address now is 39, OLD BOND STREET, W.1.
(just off Piccadilly), 1st floor only.

WE HAVE NO SHOP.

Tele. : Gerr. 3077.

CIRO PEARLS, Ltd. (Dept 16.)

The Cream most extensively used
by Officers during the Great War

LUTETIAN CREAM

The quality dressing for Brown Boots
and Brown Leather Equipment

Light, Dark, Extra Dark.
Toney Red.

Sold in Bottles
1/- & 1/9

In Tubes 1/3

Manufactured by

E. BROWN & SON LTD

7, Garrick St., London, W.C.2.

Paris, 26, Rue Bergère.



"The Phagocytes, or Eater-Cells"—Continued from page 314.

number of cholera-bacilli. Just in the same way (as hundreds of observers have now shown) all kinds of disease germs and the deadly "wound-infecting" germs are seized and destroyed by the ever-active "phagocytes." They are indeed the "scavengers" of the animal body. It is on them that we have to rely in our battle against infective diseases. Consequently Metchnikoff and his followers have found out what will help and what will retard the "phagocytes" in their life-saving work. They not only swallow and digest hostile germs, but are attracted or repelled by them, conquer them by chemical poisons which they exude, and can be assisted and strengthened by various artifices now discovered by medical science.

The escape of the "phagocytes" (Fig. 5) from the blood-vessels in inflammation (diapedesis as it was called), and in fact inflammation itself, is explained by Metchnikoff. It only occurs in animals which have a highly developed system of blood-vessels under the control of

the nervous system. The heat and redness of the inflammation is due to a local arrest of the blood-stream—allowing the "phagocytes" to escape at an injured spot in vast numbers and so to eat up and destroy dead tissue, foreign substances and, above all the "wound-poisoning" bacteria, which would otherwise enter at the broken skin-surface and multiply with deadly effect. Thus we have briefly set forth the answer to the question "What are 'phagocytes'?" They are so important and are so dominant a feature in the new surgery and new medicine associated with the great germ-theory of disease, that everyone should have a clear conception of their nature. Our knowledge of them has been greatly advanced by the study of wounds and their infection during the Great War, and is increasing every day.

"THREE CHEVRONS."

DURING the war, and especially in its early stages before the censorship became stricter, many letters from officers and men at the front to their friends at home found their way into the papers, and many of those who read them must have wished that they could be preserved, for in such letters a vast mass of literary and historical material was being compiled in odd corners of trenches and billets, or in cabins at sea, which would be of great interest and value to future readers. Much of it, unfortunately, was likely to be lost in the welter of war, but some has survived. A case in point is a collection of letters just published under the title of "Three Chevrons," by "Orex," in the "On Active Service Series" (John Lane). From the title-page we learn that "Orex" is the pseudonym of Major H. F. Bidder, D.S.O. His letters have been printed exactly as they stood, without being in any way written up for the sake of effect. After serving for a few months at a port in England, the author went out to France

in December 1914. He saw much fighting, and experienced all the discomforts of trench warfare. Thus we find him writing from a place nicknamed "the Aquarium," because of "the pretty arrangement of drip fountains and pools."



MAKING A MODEL OF THE LARGEST FLOWER IN THE WORLD: A GIANT ARUM FROM SUMATRA.

The photograph above shows a model made by Mr. H. Smedley, of Brighton, of the largest flower in the world, a giant Arum, which comes from Sumatra. The bloom is sometimes twelve or fourteen feet in height.

and suggesting to the C.O. that the men should be called "His Majesty's Mudlarks." In February 1915 he was invalided home, but was back in France two or three months later, and remained there till December 1916, when he returned again, on duty, to England. "Soldiering at home," however, proved less to his taste, and in April 1917 he is once more writing from France. The letters tell of actions great and small, details of campaigning, and homely incidents of life in billets and talks with French people. The last letter from France, dated June 9, 1917, describes the Battle of Messines; and the book closes with the next, written in England on Nov. 12, 1918, the morrow of the Armistice. "To-day," writes Major Bidder, "I came up on my way to London through the same country that I went down through in August 'fourteen." The war had become a memory, and the memory has now become a book.



LIBERATED BY THE KING-EMPEROR'S "CLEMENCY" ON PEACE DAY: INDIAN EX-PRISONERS LISTENING TO THE READING OF THE PROCLAMATION.

In honour of the proclamation of peace, a large number of prisoners in India received the King's clemency, and were released from jail. The photograph above shows three hundred liberated prisoners at Allahabad listening to the reading of the Peace Proclamation.



RILETTE



The River.
Sunshine—smooth waters
And maidens demure :
—To the River !
—By Motor !
On "CLINCHERS"—so sure !

North British
"CLINCHER"
Registered Trade-Mark
Motor TYRES

LADIES' NEWS.

THERE is a delightful human gregariousness about our Prime Minister. He is off on a well-deserved holiday—not at some quiet spot near a golf-links, but near Deauville, the gayest place there is just now. Our wonderful little Welshman will be gay, too: he has been in dead earnest for so long that his Celtic nature must call for the inevitable contrast. The dresses at Deauville are said to be the very smartest seen since the war—some not a little daring, but in colour and design rather than in scantiness of material. Hats, a friend just from Normandy's fashion spot tells me, are too delightful, of many shapes, and trimmings of infinite variety; but all with the true Parisian *cachet*. It is some subtle way weds the hat to the wearer, so that they two shall be one picture, always good to gaze upon.

It is good news that we can wear short fur coats this next winter. They are cut on quite new lines, rather cape-like, and for walking they are the only fur coats possible. Long ones are merciless back-breakers, even in the light furs now at our disposal. During our recent troublous times we learnt that walking is no bad thing; and then we are afraid of the Taxidermists. Unless the driver wears a silver badge or a war ribbon, we would rather walk than hail him. Fur fashions are always the first to be fixed, and those for the autumn are alluring. Moleskin will be a favourite. A short coat of it is very cleverly combined with deep blue brocade used as Empire collar, lapels, and cuffs—all of which are edged with the fur. Stoles will be much worn in the autumn, and are soft, long, draped as the wearer wishes, and have a special point in an effective and handsome brocade lining. Trimming one fur with another will be a feature of next winter; and the trimming will often take the form of contrasting bands, as seal musquash with squirrel. We have a probable Indian summer to look forward to in the two months to come; furriers' plans have, however, to be previous, and the novelties begin to attract attention now.

Women who do nothing for their faces cannot expect their faces to do much for them. Without undue fussing and generous use of skin foods and washes—quite unnecessary when Nature has been kind—the best skin demands



A GRACEFUL EVENING GOWN.
Moonlight-blue Georgette has been allied with heavy silver embroidery to compose this gown, the lines of which show modern fashion in a particularly becoming mood.

some attention if it is to remain best through tests of wind, weather, and smoke-laden atmosphere. Malacine Crème-de-Toilette is a delightful thing to use, and it has the emollient and healthful effect on the skin which it needs and craves. It can be obtained from any first-class chemist, perfumer, or stores. Few knowledgeable women leave for holidays without a jar of it. After a day by the sea, or on it, a long motor drive, a day on the moors or lochs, or by or on the river, some rounds of golf, or some sets of tennis, a rub over with Malacine is a thing your skin says a real "thank you" for.

Longer skirts have come. While they are four inches below the short limit reached in the summer, they are well off the ground. Exaggeration and lack of judgment are the merciless murderers of vogues; and the short skirt nearly to the knees, which showed neat, slim ankles, shapely calves daintily clad, and pretty feet neatly shod, was a slightly thing and a smart. Worn by the possessors of useful feet, sturdy legs, shoes more startling than neat, and stockings more elaborate than good, the short skirt was a very unsightly thing; and so it is dying now for lack of that knowledge which Bobbie Burns desired: "Oh wad some power the giftie gie us to see ourselves as others see us!"

I am told that sleeveless gowns and stockingless legs are coming into favour, and I am loth to believe it. An authority at Harrods, than whom there is none higher, has administered comfort in a large dose. He has been to Paris, Trouville, Deauville, Ostend, and other places where the competitors for Fashion's favour take their preliminary canter. He says that these extreme styles may be included in the "also rans"! He has seen sleeveless dresses and stockingless legs, and has been amused, as have other people; but they are not taken seriously, and no expert collecting models for England would buy an extreme sleeveless one, or advocate bare legs as the complement to bare arms. He or she would know their customers' taste better. Harrods' styles for the autumn leave nothing to be desired, and the most earnest devotee of smartness and originality will find in the salons of the great house in Knightsbridge a large variety of things to please them, and plenty of lovely stockings to save bare legs from shockings!

A. E. L.

SIR JOHN BENNETT, LTD.,
£3 : 10 : 0 IN STRONG SILVER CASE

ACCURATE RELIABLE

The "Service" Wrist Watch, with luminous figures and hands visible at night. In silver case with lever movement and leather strap suitable for rough wear. Air, damp, and dust tight.

£3 : 10 : 0

A large selection of other varieties from £3 to £10.

WATCHES, CLOCKS, & JEWELLERY of every description.

ILLUSTRATED CATALOGUE POST FREE.

SIR JOHN BENNETT, LTD.,
65, Cheapside & 105, Regent Street, London.

'Bynogen'
Brings Health

IN THE STRUGGLE BETWEEN HEALTH and disease the lack of sustaining food is often the cause of the body's surrender. What is essential is a reserve of strength over and above the needs of the hardest and most trying day's work. This reserve is supplied by 'BYNOGEN' which brings strength to every part of the body. It maintains full nutrition by nourishing and re-vivifying brain, nerves and muscles. 'BYNOGEN' is specially recommended for Nervous Exhaustion, Dyspepsia, Insomnia and all enfeebled conditions.

Sold by all Chemists at 1/9, 3/-, 5/- & 9/-

Allen & Hanburys Ltd., London.

SEASICKNESS

TRAINSICKNESS

Positively prevented and cured by

MOTHERSILL'S SEASICK REMEDY.

Testified by Royalty, Nobility, Army, Navy, and Airmen all over the world

Does not contain Cocaine, Morphine, Opium, Chloral or any of the Coal Tar Products, therefore there are

No bad after-effects.

GUARANTEED OR MONEY REFUNDED.

All Chemists, 3/- & 7/-

MOTHERSILL REMEDY Co., Ltd.
19, St. Bride Street, London, E.C. 4

Hindes HAIR TINT

For GREY or FADED HAIR

Has grey or faded hair any shade desired—brown, blue, brown, light brown, or black—permanent and washable, has no grease, and does not burn the hair. It is used by three-quarters of a million people. Medical certificate accompanies each bottle.

2/6 per Bottle.

Chemists, Stores, and Hairdressers, or direct from

HINDES, Ltd., 1, Tabernacle Street, LONDON.

Telegrams: Bathchair, Wesdo, London.

By Special Appointment to

CARTERS
(J. & A. CARTER) LTD

"The Alleviation of Human Pain."

SELF-PROPELLING CHAIRS

The "Wiesbaden"

Self-propelling Chairs and Hand-Tricycles, for in or out-door use. Of distinctive construction and unexampled durability.

These Chairs are illustrated, with prices, in Sectional Catalogue No. 4.

If further interested, please ask for *Modern Comfort Furniture*, the standard work of reference for all Invalids and Comfort Lovers (600 illustrations).

EVERYTHING for the WOUNDED or INVALID

2, 4, & 6, NEW CAVENDISH STREET, LONDON, W. 1.

The SUPER BRAND

Spinet

MIXTURE AND CIGARETTES

MILLIONS OF PEOPLE

FLORILINE FOR THE TEETH.

have used this most economical Dentifrice with utmost satisfaction. A few drops produce a most refreshing lather and cleanser, rendering the teeth white, and arresting decay.

Also put up in Powder form.

Absolutely BRITISH.

Why not give it a trial?

PANAMA PEARL NECKLETS

From 3 Gns

MOST WONDERFUL REPRODUCTION. IMITATION IN PERFECTION. PERFECTION IN IMITATION.

Old Gold Jewellery, Bric-à-Brac, Bought or Exchanged.

MACMICHAEL,
18, 19, 20, Audley Street, Grosvenor Square, London, W. 1

LLOYD'S IN TUBES, 1s. 6d. & 3s. each

THE ORIGINAL EUXESIS FOR EASY SHAVING.

WITHOUT THE USE OF SOAP WATER OR BRUSH.

Put a Tube in your Kit Bag

The Label of the ORIGINAL and GENUINE Euxesis is printed with Black ink ONLY on a Yellow Ground, and bears this TRADE MARK

We bought the business, with the recipe, trade mark, and goodwill from the Executors of the late A. S. Lloyd. The genuine is now manufactured ONLY at our Factory

From all Chemists, Hairdressers, &c.

Wholesale only: R. HOYDEN and SONS, Ltd., Berners Street, W., and City Road, E.C.



Choose ripe fruit!

The wise wife chooses ripe fruit for the same reasons that she chooses the best Custard — *BIRD'S* — to go with it.

Ripe fruit is safer and more wholesome, and requires less sugar. In like manner the purity of Bird's Custard safeguards health. *BIRD'S* also adds the all-important nutriment, and its rich creaminess blends with and softens the fruit making it acceptable to the system.

BIRD'S CUSTARD

seems just made to go with the luscious fruits. There is no more tempting sight than golden Bird's Custard mingling on the plate with the rich reds and delicate greens of the juicy fruit.

Here you have food that awakens flagging appetites on hot days, refreshes, satisfies, and adds to the joy of living.

There is no custard so pure or so wholesome as BIRD'S, the Nutritious Custard.



C322

WATSON'S BEST BRITISH BINOCULARS.

THE "SUNICA" PRISM GLASS.

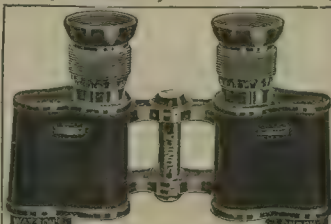
Watson's manufactured and supplied more than 30,000 Prism Binoculars under Contracts with the Admiralty and Ministry of Munitions for the Great War.

BUSINESS AS USUAL.

This Prism Binocular is intended for the hard, rough use of the Soldier, the Sportsman, Tourist, and all who want to see distant happenings with the clearness of nearness. Is damp-proof and dust-proof. You can immerse it in water without injury.

Send for Emergency Catalogue 4 B.

W. WATSON & SONS,
Established 1837. Ltd.,
Works: BARNET, HERTS.



6 diameters. The best prism glass is the "Sunica."
DAMP-PROOF AND DUST-PROOF.
£10 10 0. Post Free.
8 diameters. £11 0 0. Post Free.

UNEQUALLED. ENTIRELY BRITISH MADE.

The definition is superb. The angle of field of view is as wide as the eye can embrace. The stereoscopic effect causes the objects to be seen in correct perspective. Its luminosity is very fine.

Send cash for one to-day. In solid leather with Neck Sling and Shoulder Straps, post paid to any part of the world.

£10 10 0.

Manufacturers of Field Glasses and Telescopes, Wholesale and Retail to the British War Office and Admiralty and Foreign Governments.

313, HIGH HOLBORN, LONDON, W.C.

Craven
Mixture

Craven
Mixture

A
MIDSUMMER'S DAY DREAM.

Craven MIXTURE

Is one of the pleasures of life that really matter, and as Sir J. M. Barrie says:—

"A TOBACCO TO LIVE FOR."

Fragrant, Mellow and Cool.

2/2 for 2 ozs.

Packed in Tins.

CARRERAS, LTD., 55, Piccadilly, London, W. 1.
Established 1788.

Suits for the Moors

and every-day country life.

BURBERRY Autumn Models

Ready for Use or To Measure, combine distinction and originality with such versatile usefulness, freedom and durability that a woman needs no other form of outdoor dress.

Burberry Suits Ready for Use are made in an exhaustive number of standard Burberry Models, simple in outline yet all bearing the stamp of distinctive masterpieces of art. Workmanship and finish are of the highest quality, sizes are so numerous that they fit any normal figure, and designs are so various that the most diverse tastes and requirements are fully satisfied.

Burberry Models Made to Measure fulfil individual ideas, and when desired are exclusive to the wearer. They are made from an immense choice of exquisite Burberry materials illustrating the latest colour-schemes and most unconventional patterns.

PATTERNS, PRICES AND ILLUSTRATED BOOK OF LATEST MODELS SENT ON REQUEST.

COATS AND GOWNS CLEANED BY BURBERRYS. All weatherproof garments re-proofed by Burberry processes. Prices sent on application.

BURBERRYS HAYMARKET S.W. 1 LONDON

8 & 10, Boul. Malesherbes PARIS; and Provincial Agents



SCIENCE JOTTINGS.

THE DECAY OF THE BULL-DOG.

THAT the bull-dog is a degenerate there can be no question. As much is admitted even by some of the greatest champions of the breed, and their strictures are based entirely on superficial characters, and the lack of stamina which this breed now displays. It is not, indeed, till we come to look beneath the surface that the full measure of this decadence can be seen. The skull, perhaps, more than any other part of the animal, provides the most striking evidence as to the justification for this condemnation. But this is a witness which has never been examined by the breeder. An instance in proof of this came under my notice but recently, when a well-known breeder and winner of prizes at the show-bench, seeing the skull of Champion Kilburn Duke in my room at the Natural History Museum, asked to what animal the skull belonged. The assurance that it was that of a bull-dog occasioned exclamations of surprise and incredulity. No well-bred dog. I was assured, had such an excessive projection of the lower jaw, or so short a face!

This surprise at the naked truth, this inability to appreciate the nature of the underlying structural features of the skull, was due to the fact that breeders, strangely enough, confine themselves solely to standards which appeal to the eye alone, and apply only to the living animal, in which the consequences of the shortening of the face, which has so long been aimed at, are entirely masked by the great upper lips. The skull shows that while the lower jaw has retained, approximately, its original length, the upper jaw has receded so far as to leave the incisors, or "cutting teeth," and the canines immediately behind them projecting far in front of their fellows to which they should be opposed. The palate, originally long and narrow, had become "telescoped," and is roughly heart-shaped, and wider than long. The third "grinder" has, in consequence, become squeezed out of its place, lying now within the tooth-row to bite against the hinder cusp of the great "carnassial" of the

lower jaw. The upper "carnassial" now bites behind its fellow of the lower jaw, instead of outside it. Hence it no longer fulfils its purpose. And, furthermore, all the teeth are reduced in size.

The persistent endeavour to exaggerate the salient features of the original bull-dog—the product of the brutal sport of bull-baiting—has slowly and imperceptibly transformed this once formidable and savage beast into a monstrosity, and decadent at that. The repulsive-looking head would seem, at least, to betoken a ferocity and tenacity of purpose even exceeding that of its



SHOWING THE ENORMOUS SHORTENING OF THE FACE: THE SKULL OF THE BULL-DOG CHAMPION KILBURN DUKE.

This photograph of the skull of the bull-dog Champion Kilburn Duke shows the enormous shortening of the face, which has receded so far backwards as to throw the teeth of the upper jaw completely out of position in regard to those of the lower jaw.

prototype. Yet this is far from true. The great width across the chest and the widespread legs are complacently contemplated by the pundits of the show-bench as indicative of strength and staying power; but these too are merely semblances of non-existent power.

If the bull-dog of to-day be a mere sham, he is yet, from the point of view of the evolutionist, an exceedingly interesting animal, affording many problems for solution.

He has come into being within the last seventy years. What manner of dog will be the bull-dog of seventy years hence if the present standards of perfection and "improvement" are maintained? To say that this animal is the product of "selection" on the part of the breeder would be to make an overstatement, suggesting a system of breeding to attain a definite, preconceived standard, whereas all that has been done has been to seek, by selective mating, to intensify features pleasing to the eye of the fancier of this particular breed. He has, throughout, worked entirely in the dark as to the effect of his efforts on the underlying bony framework. And this is true of every other breed of domesticated animal. For the skeleton is never really taken into account. Where the bony framework receives any consideration at all, this is expended solely upon superficial features patent in the living animal.

Unfortunately there appear to be no skeleton remains now in existence of the original bull-dog; that is to say, of the dog that was used for bull-baiting. Such remains would be of immense value for comparison with the bones of its degenerate descendant. Similarly we have no skeletons of the early mastiff from which it is believed the original bull-dog was derived. This is because, or largely because, the old-time "Museums" were storehouses for "curiosities" gathered together without rhyme or reason. Our standards in these matters have, happily, changed, and efforts are now being made, as at the British Museum of Natural History, carefully to collect the skeletons of domesticated animals of all kinds, but preserving only such as have won distinction on the show-bench, thus making it certain that each individual specimen was typical

of its race according to contemporary standards of the fancier of that race.

W. P. PYCAFT.

In connection with the Australian Commonwealth Flight, Messrs. Kodak (Australasia), Ltd., are offering cash prizes to the value of one thousand pounds for photographs taken *en route*. The first prize is £800, the second £150, and the third £50. Competitors should apply for information to Kodak, Ltd., Kingsway, London, W.C.2.

URODONAL

in
CASTLE

and cottage alike is the remedy par excellence for all forms of URIC ACID disorder, such as RHEUMATISM, INDIGESTION, SCIATICA, GOUT, and a score of troublesome and dangerous ailments which

owe their beginning to this devastating poison accumulating in the system.

URODONAL is literally the ONLY satisfactory means of ridding your body of these impurities in a natural and scientific way.

URODONAL dissolves uric acid as easily as hot water dissolves sugar; it cleanses the liver, purifies the blood and tissues, imparts suppleness to the arteries, and prevents obesity by oxidizing fat.

URODONAL also cleanses the kidneys, which it frees from the presence of uric acid crystals and all the toxins and impurities which injure the renal tissue; it also removes obstructions (stone, gravel, etc.).

Numerous experiments have proved the great efficacy of URODONAL and have established its constant action. Eminent Members of the French Medical Faculty, as well as of other countries, have duly recognized the therapeutic value of URODONAL, which has likewise obtained the sanction of many leading members of the English Medical Profession.

Price 5/- and 12/- per bottle.

Prepared at Chatelain's Laboratories, Paris. Obtainable from all Chemists and Stores or direct post free, 5/6 and 12/6, from the British Agents, HEPPELLE, Chemists, 164, Piccadilly, London, W.1.

Full descriptive literature sent post free on application to HEPPELLE.

GLOBEOL

The Ideal Tonic.

Anæmia Neurasthenia Debility
Convalescence Nervous Exhaustion Overstrain



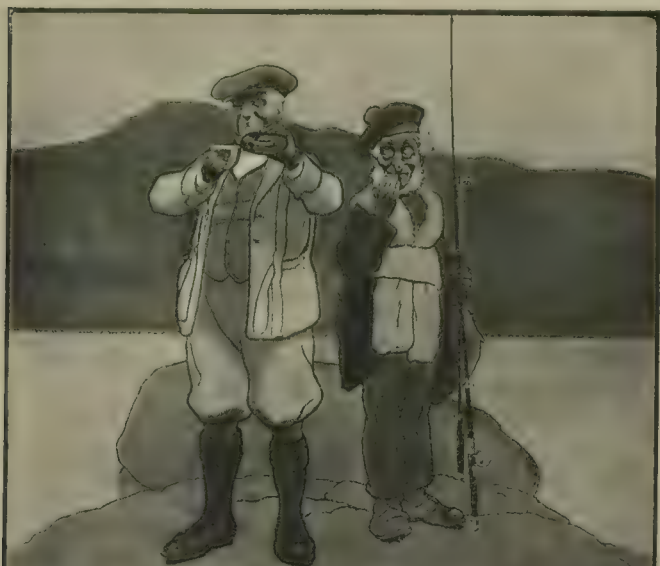
Globeol—the good sower of perfect health.

Globeol pills are composed of the total extract of the red corpuscles of the blood associated with colloidal iron and manganese, to which is added a particle of quassa, the latter being included with a view to assisting the digestion of food and its consequent conversion into pure, strong, health-giving blood.

Globeol is therefore an invaluable blood-forming and nerve-strengthening tonic. It overcomes the most obstinate cases of anæmia, owing to its close affinity to the blood, while it is free from the disadvantages of the majority of ferruginous medicaments (digestive disorders, constipation, discolouration of the teeth, etc.).

The value of Globeol in nervous disorders (Neurasthenia, Nervous Exhaustion, etc., etc.) has been fully established and its efficacy confirmed by the eminent members of the Medical Profession abroad. Its merits are now claiming the attention of Physicians in this country, many of whom are prescribing it regularly.

Price 5/- per bottle. Prepared at Chatelain's Laboratories, Paris. Obtainable from all Chemists, or direct, post free 6/3, from the British and Colonial Agents, HEPPELLE, Pharmacists, 164, Piccadilly, London, W.1. From whom can also be obtained, post free, the full explanatory booklets, "Scientific Remedies" and "Treatise on Diet."



BL SCOTCH WHISKY

EXTRA SPECIAL, GOLD LABEL.

Proprietors :
BULLOCH, LADE & CO., Ltd.,

Established 1830,
DISTILLERS AT GLASGOW, ISLAY, AND CAMPBELTOWN.

OFFICES: GLASGOW and LONDON.

AITCHISON'S Prism Binoculars

The Ideal Glasses for all Sporting and Touring Purposes.

The **MARK 1**, is the standard service glass as supplied to the Government throughout the war. All the models which are fitted with eyepiece focussing are hermetically sealed, and consequently withstand exposure to all kinds of climates and weather conditions.

	Magnification	With Eyepiece Focussing	With Central Focussing
The MARK 1 (as illustrated)	x 6	£10 10 0	£11 15 0
The LUMAC	x 8	£11 0 0	£12 5 0
The LUMAC	x 12	£13 0 0	£14 5 0
The OWL (extra large aperture)	x 6	£12 0 0	£13 5 0

Prices include best solid leather sling case and lanyard.



Call and inspect, or write for Price List No. 6 L.

AITCHISON & CO., LTD.,

Opticians to the British and Allied Governments.

428, STRAND, W.C. 2

281, Oxford St., W.1 130, High Holborn, W.C. 1
And Branches, London, LEEDS—37, BOND ST.



The **FRENCH** Natural Mineral Water.

VICHY-CÉLESTINS



for disorders of the **LIVER:**
GOUT, GRAVEL, DIABETES,
RHEUMATISM and all ailments
arising from Uric Acid.

N.B.—The Springs are situated in FRANCE in the department of the Allier, and are the property of the

FRENCH GOVERNMENT

Can be obtained at all Chemists, Grocers, Wine Merchants, Stores and Hotels throughout the World.

Wholesale Agents: INGRAM & ROYLE, Ltd., Rangoon Wharf, Pelvedere Road London, S.E.; and at Liverpool and Bristol.

*"Beautifully Cool
and Sweet Smoking."*

Player's Navy Cut Tobacco and Cigarettes

SOLO ONLY IN THE ORIGINAL
PACKETS AND TINS AND MAY
BE OBTAINED FROM ALL STORES
AND TOBACCONISTS OF REPUTE.



**From War
to Peace.**

The Allies having proved the value of the puttee in the strenuous work of War, Fox Bros. & Co., Ltd., are now adapting it for cycling, motoring, shooting, walking, golfing and riding.

FOX'S PUTTEES

(F.I.P. — Fox's Improved Puttees) "Non-Fray Spiral"

Regulation Heavy Weight, 8/6 per pair.
Extra Fine Light Weight, 10/- per pair. Extra Fine Light Shade, 11/- per pair.

Patentees & Sole Manufacturers:

FOX BROS. & Co., Ltd. (Dept. B), Wellington, Somerset.

Agents for U.S.—The Manley & Johnson Corporation, 260, West Broadway, New York, U.S.A.

CAUTION.

See that the name "FOX" is on the metal disc, right and left, attached to every genuine pair of FOX'S New Non-Fray Spiral Puttees.



THE CHRONICLE OF THE CAR.

Why Car Prices are High.

Last week I visited the works of a well-known firm of engine-builders and got an interesting sidelight on the reasons why cars are costing such inordinately high prices. I may say that this firm is specialising in a type of comparatively low power, which it is turning out in large

castings, this could be turned out for £8, including all overhead charges. The lowest quotation they could get outside for the same casting was £17! Going deeper into costs, I was informed that a light car gear-box cannot now be purchased for less than £54. Before the war it would have been dear at £20. A rear-axle costs a minimum of £37. A reasonable price would be about £15. Taking the components of the car all round, everything costs in about the same ratio. The only satisfaction to be got out of these figures—and it is a scant one to the purchaser—is that they convince one that it is not the car-manufacturer who is doing the profiteering. He is as much in the hands of the trade combines from whom he gets his components as the public, and cannot help himself. Nor will he be able to until the full effect of the removal

Shortage of Fuel in Scotland.

Motorists who are going up to Scotland for the holidays are strongly advised to take sufficient petrol with them to last their stay and bring them back to the North of England. Apparently, a state of affairs exists which is very like a petrol famine. Many motorists are hung up, unable even to get enough fuel to bring them across the border. The A.A., with characteristic energy, has got into touch with the benzol interests, which are taking steps to forward supplies to the affected areas. In addition, the Association has communicated with the Department which is winding up the Petroleum Pool Board, pointing out the serious position in which many owners of cars are placed. It is expected that the situation will be eased very shortly, but there are so many cars detained by the shortage that the latter is bound to be felt for a considerable period.

In this connection it is pointed out that one of the chief hindrances to the large petrol distributing firms is the continued shortage of cans; so that, although there is a sufficient supply of motor spirit available to fill all requirements, it cannot be efficiently distributed on account of the lack of receptacles. An appeal is, therefore, being



BY THE TOMB OF THE WIFE OF HAROUN AL RASCHID: A CROSSLEY TOURING-CAR IN BAGHDAD.

numbers at a price well below £50 for the motor alone which is certainly a very low figure when the present day cost of materials and labour is taken into account. There can be no question, therefore, of this particular firm participating in the orgy of profiteering which is the vogue of the time. Having regard to the fact that the power-plant of the average light car costs, as I have said, under £50—and is a really first-class engine at that—I was more than a little interested to find out what becomes of the balance of the £400 or more which represents the average price of the low-powered car as listed now.

In conversation with the managing director, he mentioned that the limiting factor of engine output was cylinder castings. "If," he remarked, "we could get all the castings we want, we could employ another 700 men. As a matter of fact, we could get them; but we should have to go to a firm in the 'ring' and pay 125 per cent. more for them than we do now." Later, he showed me a casting for a four-cylinder motor, and said that in their own foundry, although they do not pretend to do their own

on import restrictions is felt, and the profiteers come up against the competition of French and Belgian manufacturers. The question which irresistibly forces itself on one is: How do these people imagine we are going to compete in foreign markets and retain our overseas trade against America when they are practising these get-rich-quick methods? Possibly they neither know nor care, and are content to line their pockets at the expense of the public and to retire from business when the time comes to face competition in the home market. Certainly they are practising a queer brand of patriotism.



AT "DOLITTLE MILL" ON THE BANKS OF THE OUZEL: A NEW 25-H.P. VAUXHALL.

made by the companies to all motorists to return their empties as soon as possible. If every owner of a car or motor-cycle would, or could, return only a single can, the situation would be considerably relieved. It must be borne

(Continued overleaf.)

The Essex Sets New Standard

The Ideal Light Car Type.

For Light Car Builders

A light car that has beauty in appearance, a definite aim and air in design, as well as riding and driving comfort, has at last been created.

The Essex is the new type car—the car that unites the suppleness and economy of the light car with the luxury and endurance of the large, costly car.

The Essex has the stamina for the hardest kind of driving. No rough roads or steep hills will disturb the comfort of riding in the Essex. Essex performance has already made it known as the ideal light car—although it has only been before the public a few months.

The Essex is unique in the care taken to eliminate riding discomforts.

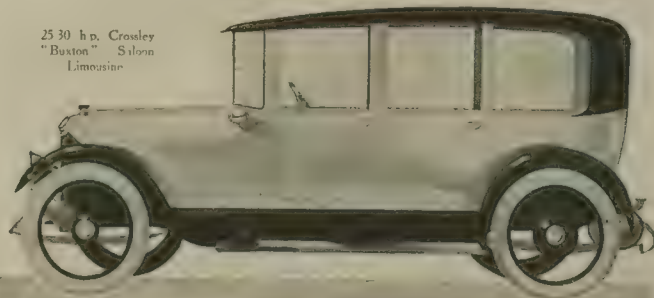
Every detail has undergone years of refinement at the master hands of the famous Hudson Super-Six designers. Now the Essex is ready to take its stand as the ideal light-car type.

Whether from a technical or artistic viewpoint, the Essex will give its owners pride in its possession in the company of the most expensive cars.



Cable Address, Essexmotor, Detroit.

25 30 h.p. Crossley "Buxton" Saloon Limousine



The R.F.C. was a force that dare not fail—on land it put its trust in the Crossley.

EFFICIENCY—supreme efficiency—was the keynote of the R.F.C., later re-named the R.A.F., and on land the Crossley was its choice of car.

There were not hosts of expert drivers in the Corps; therefore, the car it used would have to stand maltreatment; would have to meet emergencies; would have day in, day out, to travel tortuous paths and, owing to exigencies of war, would have to keep on giving service without a fraction of the care a private owner would bestow upon his "steed."

And so the R.F.C. decided on the Crossley, the car that played throughout the war—a bigger part on every battle front than any other make.

Write for full particulars of the

Crossley

25-30 h.p. R.F.C. MODEL,

a counterpart of the car that has never failed, however big or difficult the task demanded of it.

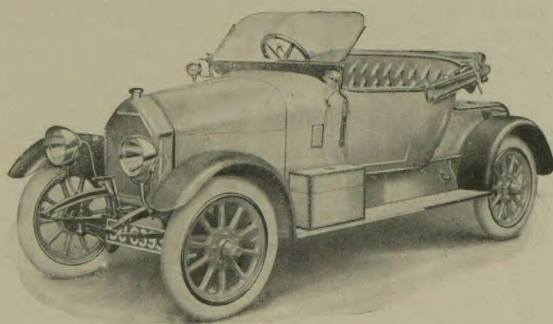
CROSSLEY MOTORS, LTD.,

Telephone: City 4611 (Private Exchange).

Builders of Quality Cars, MANCHESTER.

Telegrams: "Motors, Gorton."

London Office and Service Depot: 50, Page St., Westminster, London, S.W. 1



The Ideal Car.

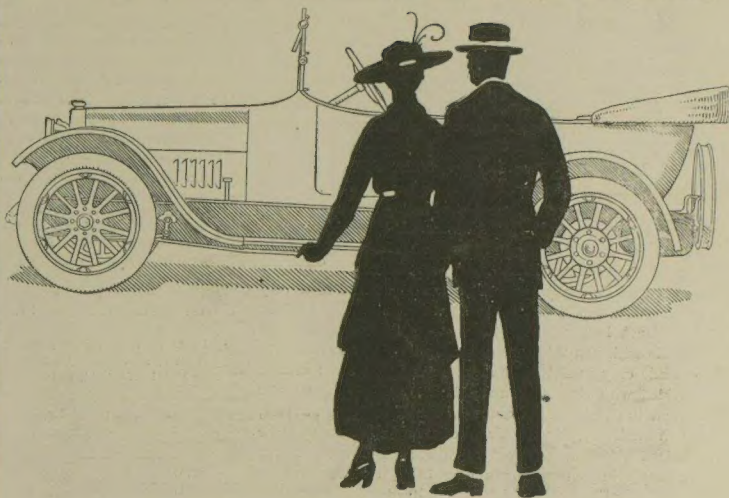
THE HUMBER CAR is ideally distinctive both in design and finish. It is the superlative example of riding comfort and smooth-running efficiency, reflecting in every detail the many advances made in Motor construction since Motoring was first conceived. It is the acme of economy and endurance—the ideal car.

Humber

HUMBER LIMITED

HEAD OFFICE AND WORKS . . . COVENTRY.
LONDON Show Rooms . . . 32, HOLBORN VIADUCT, E.C.1.
AND DISTRICT Repair Works . . . CANTERBURY ROAD, KILBURN, N.W.6
SOUTHAMPTON AND DISTRICT: 25/27, LONDON ROAD, SOUTHAMPTON.

A194.



Admiration and — Anticipation

YES, they can't but help admire it and reflect on all the pleasure it will bring them.

Compared with the 1916 Buick "Six," the 1919 model has a 3 in. longer wheel-base, enclosed valve mechanism, best known type of dry-plate clutch, improved lubrication of the valve rockers and a system whereby the coupling at the back of the gear-box is now lubricated automatically from the gear-box.

Send for illustrations and prices of all 1919 models.

Buick

GENERAL MOTORS (Europe) LIMITED

Telegrams "Buickgen, London." 136 Long Acre, London, W.C. 2 Telephone Gerrard 9520

EVERYONE KNOWS THOSE TABLE KNIVES,

MADE OF FIRTH'S STAINLESS STEEL, WHICH NEVER NEED POLISHING BECAUSE THEY DO NOT RUST, STAIN OR TARNISH

FIRTH'S STAINLESS STEEL

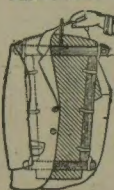
**HAS TAKEN ITS PART IN THE WAR AND IS
NOW RELEASED FOR PEACE SERVICE.**

IT IS NOW AVAILABLE FOR ALL THOSE PURPOSES WHERE ITS PERPETUAL BRIGHTNESS AND LABOUR-SAVING QUALITIES, COMBINED WITH THE STRENGTH AND DURABILITY OF STEEL, RENDER IT SO VALUABLE.

THOS. FIRTH & SONS, LTD.,
SHEFFIELD.

HANDIEST

TROUSER PRESS EVER MADE.



Creases and Stretches perfectly. Saves its cost over and over. Weighs 20 ozs. Packs into corner of kit bag. Hangs in wardrobe when in use. **BOUGHT BY THOUSANDS OF OFFICERS.** "ALPHA" (pat.), No. 1 7/- Portable Press Post Free U.K. "ALPHA" No. 2 Portable Press & Suit Hanger combined. Wonderful economiser of space and clothes. Post Free U.K. 8/6 (France 6d. extra).

Cross Cheque or P.O. "London City and Midland Bank." **MAY & CO.** (Dept. 98, 3, Tudor St., London, E.C. 4.)

Special Offer of **Everbright** SHEFFIELD MADE **BREAD KNIVES**

This beautiful Stainless Knife is usually sold at 15/- but it is offered at 10/- to induce you to test the splendid permanent cutting quality of our famous "Everbright" TABLE Cutlery. "Everbright" will cut bread or anything else for a life-time and retain its fine edge with ordinary sharpening. Send today, as the supply is limited.

10/- each Write for Illustrated Price List

EVERBRIGHT, LTD. Dept. 66, 105, Victoria Street, London, S.W. 1.

TATCHO

The HAIR GROWER

Mr. Geo. R. Sims' discovery 1/3, 2/9, 4/6

STEAM CULTIVATION.

A set of Double Engine (16 h.p. nominal) Tackle, complete with implements and sleeping van; Patent Regulator Gear on Plough; new and ready for prompt delivery. Also 5-ton **STEAM TRACTOR**, quite new (R.A.S.E. Gold Medal, 1910); all latest improvements; early delivery. Apply **J. & H. McLAREN, Ltd.**, Midland Engine Works, Leeds.

Cuticura Will Help Clear Pimples and Dandruff



The Soap to Cleanse The Ointment to Heal

Don't wait to have pimples and blackheads, redness and roughness, dandruff and itching. Prevent them by making this wonderful skin-clearing complexion soap your every-day toilet soap, assisted by touches of Cuticura Ointment to the first signs of little skin and scalp troubles.

Soap 1s., Ointment 1s. 3d. and 2s. 6d. Sold throughout the Empire. For thirty-two page skin booklet address: **F. Newbery & Sons, Ltd.**, 27 Charterhouse Sq., London. Also for mail orders with price. **Don't Cuticura Soap shaves without mug.**

DUCO

After 4½ years of war the roads are simply execrable. No wonder there is a great demand amongst motorists for **DUCO Leaf Spring Gaiters**—the self-lubricating grease-tight casings which do so much to reduce the jolts and jars of the untended highway.

The **DUCO** booklet free from **BROWN BROTHERS, Ltd.**, 61, Essex St. E.C.2 And 35, Newbury St., W.1.

LEAF SPRING GAITERS

HIMROD'S ASTHMA CURE

If you suffer from Asthma, Catarrh, Ordinary Colds, you will find nothing to equal

**HIMROD'S CURE
FOR ASTHMA**
At all chemists 4/3 a tin.

Continued. In mind that the manufacture of cans has been practically at a standstill for the past two or three years, while an enormous number have been scrapped owing to the exigencies of war. Further than that, the demands for spirit are now far in excess of what they were in 1914, so that altogether an exceedingly difficult situation has arisen, which can only be met by the co-operation of all concerned.

A New Dunlop Tyre.

The Dunlop Rubber Company is introducing a new type of motor tyre which will be of a distinctive character, and which carries a very effective moulded rubber non-skid tread. The tyre will be known as the "Dunlop Magnum." The cover is a remarkably finished production, having a polished black appearance. The tread is made of a very tough rubber, which enables it to retain the pattern for a much longer period than has hitherto been found possible with non-skid designs. The Dunlop Magnum will be made only in British standard sizes, and users of cars provided with rims of non-standard sizes will have to be content to obtain tyre renewals in the older types of tyres, or, alternatively, have their wheels rebuilt to one of the standard size rims. The tyre will be produced in the company's huge new works now being erected at Fort Dunlop, sections of which are already in operation. Although some tyres are at present being issued for fitment to chassis manufacturers' new models, the company wishes it to be understood that no orders can yet be accepted for Dunlop Magnums, but announcements will be made at the earliest moment of the sizes first available.—W. W.

OUR COLOURED SUPPLEMENT.

LAWRENCE'S PORTRAIT OF THE COUNTESS GROSVENOR. WITH this issue we present our readers with a Coloured Supplement of Sir Thomas Lawrence's portrait of Countess Grosvenor, a charming example of his art. Lawrence looked upon his sitters with an eye that magnified all points of beauty or attraction, and passed over the failings that in more conscientious eyes might have made a portrait true rather than merely attractive. It was his singular gift not only to see beauty, but to pick out the aspects of the sitter that would give the most attractive result possible without absolutely rank flattery or deception. The youngest of sixteen children, he started to earn his family's living before he was seven years old, and received a public recognition at the age of sixteen for work completed two years before. He became President of the Royal Academy in 1820.

CHESS.

TO CORRESPONDENTS.—Communications for this department should be addressed to the Chess Editor, Milford Lane, Strand, W.C.

T F WALKER (Birmingham).—An elementary work on the game will explain the movement of P takes P en pass. We have no space to do so here.

H F L MEYER.—Your contributions are very acceptable.

JOHN WATTS AND ERNEST ROBINS.—Problems received with thanks.

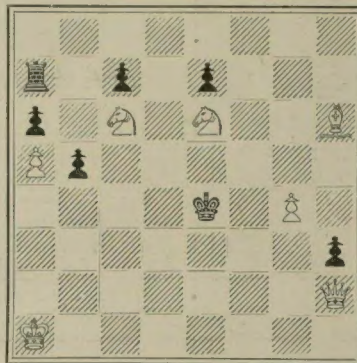
A R ROBINSON (Golders Green).—It would be wiser for you to apply direct to the secretary of the club. He can best give you the information desired.

CORRECT SOLUTION OF PROBLEM No. 3812 received from A C Brook (H.M.S. Wryneck); of No. 3813 from A C Holliday (Rochester); of No. 3814 from C A P, R F Morris (Sherbrooke, Canada), J B Camara (Puech) and T A Truscott (Forest Gate); of No. 3815 from H Grasset Baldwin (Farnham), John F Wilkinson (Alexandria), and R J Lonsdale (New Brighton); of No. 3816 from James C Gemmell (Lossiemouth), Mark Dawson (Horsforth), Thomas D Smith (Leeds), John Watts (Deal), A C Holliday (Rochester), and E J Gibbs (Upton Manor).

CORRECT SOLUTIONS OF PROBLEM No. 3817 received from H Grasset Baldwin (Farnham), J S Forbes (Brighton), A S Vosper (Bristol), G Stillingfleet Johnson (Seaford), C F Way (Emsworth), R C Durell (South Woodford), J Fowler, J Paul Taylor, J C Stackhouse (Torquay), A R Robinson (Golders Green), A H H (Bath), and Mark Dawson (Horsforth).

PROBLEM No. 3818.—By W. FINLAYSON.

BLACK.



WHITE.

White to play, and mate in three moves.

SOLUTION OF PROBLEM No. 3816.—By W. FINLAYSON.

WHITE.

1. P to K 8th (R)
2. Kt to B 6th
3. R mates.

BLACK.

- K to Q 3rd
- K moves

If Black play 1. K to Q 5th, then 2. Kt to B 4th (dis. ch.) etc.

CHESS AT HASTINGS.

Game played in the Major Tournament of the British Chess Federation, between Mr. J. R. CAPABLANCA and Sir G. A. THOMAS, Bt. (Four Knights Opening.)

WHITE (Mr. C.)	BLACK (Sir G. A. T.)
1. P to K 4th	P to K 4th
2. Kt to K B 3rd	Kt to Q B 3rd
3. Kt to B 3rd	Kt to B 3rd
4. B to Kt 5th	P to Q 3rd
5. P to Q 4th	B to Q 2nd
6. Castles	B to K 2nd
7. R to K sq	Q Kt takes P
8. Kt takes Kt	P takes Kt
9. Q takes P	B takes B
10. Kt takes B	

Black's object at this stage of the game appears to be the simplification of the position, so that his skill in end play may have an opportunity of asserting itself.

White, on the other hand, has no objection, and is quite willing to fall in with his opponent's plans.

11. Kt to B 3rd
12. B to Kt 5th
13. B takes B
14. Kt to Q 5th
15. R to K 3rd
16. R to K Kt 3rd

If now R to Kt 8th, Black replies with R to B 8th (ch), forcing either exchange of Rooks or taking two Rooks for his Queen. Probably, however, it was White's best continuation. With this defence present to his mind, it is strange Black missed the reply to White's twenty-ninth move.

20. Kt to B 4th
21. Q takes Kt P
22. Q takes R P
23. R to Kt 3rd
24. R to Q Kt 3rd
25. Q to Kt sq
26. Kt to K 6th (ch)

It was pointed out in subsequent analysis in the room, in which we believe both players agreed, that R takes R P now gives Black at the very least a draw. Black's resignation, therefore, is an addition to the "historic blunders" of chess.

The British Chess Federation, after being honoured with a reception by the Mayor and Mayoress of Hastings, formally opened its Victory Tournament in that town on the 11th inst., when a large number of players took the field in the various competitions. The chief interest naturally centred in the Master Tourney, but public attention was well bestowed all round, and the proceedings throughout attracted a large general attendance. We hope to give full results in our next issue.

At this year's meeting of the British Association, which opens at Bournemouth on Sept. 9, a sort of scientific history of the war in all its branches will be provided. Among the lecturers will be generals, poets, and a good many women. Engineers, chemists, physicists, geographers, and even such unexpected persons as archaeologists are to tell us for the first time just what wonders our men of science wrought in France and the East; and how they caught and passed the Germans in many directions.

Culleton's Heraldic Office

92, PICCADILLY, LONDON.
Arms and Pedigrees of English and Foreign Families.
Genealogical Researches in Public Records.
PEDIGREES ENGRAVED AND EMBLazonED
Seals, Rings, Dials, Book-plates (ex-libris) Engraved.
ARMORIAL STAINED GLASS. MEMORIAL TABLETS.
Sketches and Designs for all purposes.



A WELL MADE CANE CHAIR is cheaper and more convenient than an upholstered one.

A DRYAD CHAIR is shaped for comfort so as to make cushions almost unnecessary, and has won a reputation at home and abroad for sound English workmanship. Catalogues of Cane Furniture, Workbaskets, Basket Making Materials, and Metalwork post free from Dryad Works, B Dept., Leicester.

For cleaning Silver, Electro Plate &c.

Goddard's Plate Powder
Sold everywhere 6d 1/2 2s 4d.

J. Goddard & Sons, Station Street, Leicester.

MATERNITY
(Finlay's Patents, adjustable any size).
SKIRTS, 84/- to 21/-
GOWNS, 14 Gns. to 6 Gns.
CORSETS, 5 Gns. to 2 Gns.
Babywear, Layettes, Cots, etc.
H. FINLAY,
47, Duke Street, London, W.1.
(Facing Selfridges).

George Robey, Esq. C.B.E.
writes:—"I hasten to tell you how much I enjoyed smoking your 'De Reszke' Cigarettes. I shall smoke them in future as I think they are excellent in every way."

R. Kennerley Rumford, Esq. writes:—"Many thanks for the 'De Reszke' Cigarettes. They are most excellent."

Frank Reynolds, Esq. R.I. writes:—"I think your 'De Reszke' Cigarettes very good indeed."

Robert Donald, Esq. writes:—"I consider the 'De Reszke' are the best American cigarettes on the market."

THE price of the best cigarette is such a trifle more than that of the mediocre kind, that it is surely worth paying the difference to obtain the extra satisfaction "De Reszkes" give.
"De Reszke" CIGARETTES
Sold at all Tobacconists, Stores, and Military Canteens.

THERE'S A LONG, LONG TRAIL of Bugs, Fleas, Flies, Beetles, Mosquitoes etc., all killed by **KEATING'S**
14d. 5d. 6d. 1/-

BAILEY'S PUBLIC CLOCKS,
WATCHMEN'S TELL-TALES, RECORDERS, TESTERS, &c.
S. W. H. BAILEY & Co. Ltd., Albion Works, Salford.

TERMS OF SUBSCRIPTION

TO
'THE ILLUSTRATED LONDON NEWS.'
PAID IN ADVANCE.
INLAND.
Twelve Months (including Christmas Number), £2 18 9
Six Months, £1 8 2; or including Christmas Number, £1 10 7
Three Months, 14/1; or including Christmas Number, 16/6
CANADA.
Twelve Months (including Christmas Number), £3 0 11
Six Months, £1 9 3; or including Christmas Number, £1 11 8
Three Months, 14/7; or including Christmas Number, 17/0
ELSEWHERE ABROAD.
Twelve Months (including Christmas Number), £3 5 3
Six Months, £1 11 5; or including Christmas Number, £1 13 10
Three Months, 15/9; or including Christmas Number, 18/2
Subscriptions must be paid in advance, direct to the Publishing Office, 172, Strand, in English money; by cheque, crossed "The National Provincial and Union Bank of England, Limited"; or by Post Office Order, payable at the East Strand Post Office, to THE ILLUSTRATED LONDON NEWS AND SKETCH, LTD., 172, Strand, London, W.C.2.

YOUR HOLIDAY KIT

will not be complete without a good reliable fountain pen. One that will start instantly, write smoothly, never blot, and above all one that will suit your hand exactly.

What you need is a
'JEWEL'
Safety Fountain Pen No. 100
12/6

Should you prefer a Stylographic Pen, then you must have a
'RECORDER'
10/6

It is fitted with gold and palladium point and gold spring needle, and is the best stylo made.

The above pens can be obtained from all Stationers and Stores, or direct from Sole Makers:
JEWEL PEN CO. Ltd.
(Incorporated in England)
76, Newgate Street, London, E.C.1.

HOT WATER



EWART'S GEYSERS
346, EUSTON RD LONDON, NW1.

Foster Clark's
The Creamiest Custard
Cream Custard

WHERE THE PAIN STRIKES
ZOX
CURES NEURALGIA
FREE! Two Powders for you send stamped addressed envelope! Mention this paper.

THE BRITISH **BERKEFELD**
Filter
SARDINIA HOUSE, KINGSWAY, LONDON, W.C.2.

It's KARO!
—nicer than
butter or jam



HOW Karo fits the splendid appetites of hungry youngsters! "Bread and Karo, please, Mum!"—they always want it once they taste it. Give them Karo and save your butter and jam.

And Karo Syrup is excellent food. It gives the warmth and energy of sugar in more digestible form. Karo is as pure as sunshine, and as delightful as honey.

Karo never cloy—it has a just-right sweetness. Wonderfully nicer than syrups that cloy the palate.

Karo

Syrup

Puddings and tarts become more delicious and nutritious with Karo—porridge and rice a treat. Karo saves sugar and milk—makes the best ginger-bread and enticing sweets.

The spread for bread

Ask your Grocer for Karo Syrup, in 2-lb. nett air-tight tins—price 1/6 per tin. Can also be supplied in 5-lb. & 10-lb. nett air-tight tins.

CORN PRODUCTS COMPANY, LTD.,
40, TRINITY SQUARE, LONDON, E.C.3.

GLASGOW:—Gordon Chambers.
MANCHESTER:—Produce Exchange.

Paris Models in Furs

Revillon Frères

(LONDON) LIMITED

180, Regent Street, London, W.1.

"SANITAS" FLUID

AND SOME OF ITS USES.

"SANITAS FLUID" is ideal for personal hygiene and the toilet. It is colourless, fragrant, NON-POISONOUS, and does not stain linen. Its active principles are those of Pine Forests.

IN INFECTIOUS CASES AND SICK ROOMS.—Spray cloths hung in the air and about the room and add to all water used for washing the patients. The mouth should be frequently washed when possible (by means of gargling) with a mixture of one part "SANITAS FLUID" to two or three parts hot water.

WOUNDS, SORES, SLOUGHING ULCERS, EAR AND NOSE DISCHARGES, &c.—The Fluid mixed with about four parts of water should be applied by bandage, spray producer, syringe or douche. It oxidises septic products and promotes healing by first intention.

IN SCARLET FEVER and other skin diseases cold sponge with the Fluid mixed with two parts of water, and the same mixture should be used for spraying the throat or gargling.

SORE THROAT AND COLDS.—A gargle of one part "SANITAS FLUID" and two or three parts of hot water, should be used frequently.

TO REVIVIFY THE AIR.—Mix with four parts water, sprinkle about the uncarpeted floors, over sinks, and spray into the air. It oxygenates the air, destroys bad smells and keeps flies away.

AS A GARGLE, MOUTH AND TOOTH WASH, AND FOR OFFENSIVE BREATH.—Use a teaspoonful to a wine-glass of warm water morning and night and after meals.

BATH AND WASHING WATER.—Add according to liking.

TENDER AND PERSPIRING FEET.—Relief is obtained by sponging with "SANITAS FLUID" diluted with nine parts of hot water.

PRICKLY HEAT.—Fob the parts affected with "SANITAS FLUID" mixed with four parts of water.

MOSQUITO AND OTHER INSECT BITES are prevented and relieved by sponging "SANITAS FLUID" over the exposed parts several times a day.

STAINS ON WHITE GOODS—(INK, FRUIT, WINE STAINS, &c.) can often be removed by moistening the spots with "SANITAS FLUID" once or more as found necessary.

WATER CLOSETS.—Invert the cork and sprinkle a little of the Fluid into the pan every time the closets are used.

THE "SANITAS" CO., LTD., Limehouse, London, E. 14.
Disinfectant Manufacturers by appointment to H.M. the King.

Colours that carry an absolute guarantee

SUNDOUR UNFADABLE FABRICS

The Dyestuffs forming these permanent colours are made by the Sundour firm, the only firm in the world producing goods from Dyestuffs to finished Fabrics.

Sundour Fabrics are made in Casement Cloths, Reps, Damasks, Chennilles, Madras Muslins, Tapestries, Prints, Rugs, etc.

Of all the best Furnishers

Morton Sundour Fabrics Ltd.
(Trade Only) Carlisle.